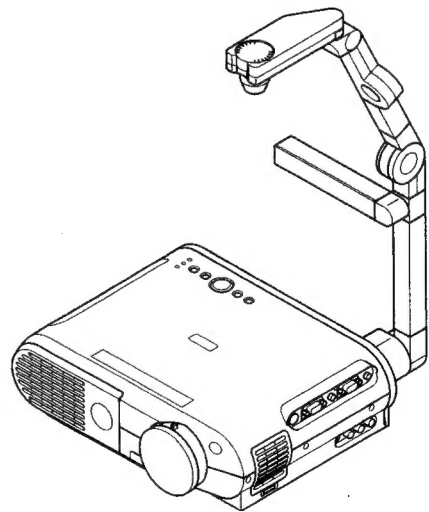


TOSHIBA

SERVICE MANUAL

3LCD DATA PROJECTOR

TLP450E, TLP451E
TLP650E, TLP651E
TLP450U, TLP451U
TLP650U, TLP651U

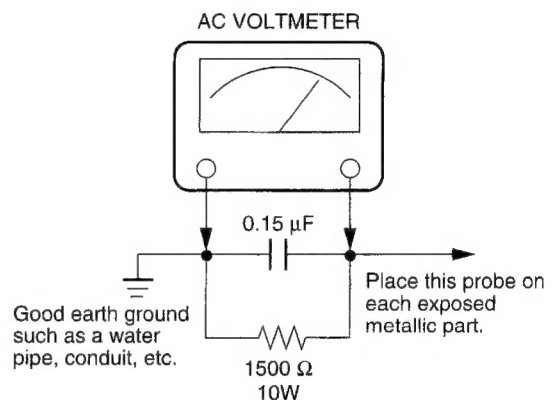


TLP451, TLP651

SAFETY PRECAUTION

WARNING: Service should not be attempted by anyone unfamiliar with the necessary precautions on this projector. The following are the necessary precautions to be observed before servicing this chassis.

1. An isolation Transformer should be connected in the power line between the projector and the AC line before any service is performed on the projector.
2. When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as; non-metallic control knobs, insulating covers, shields, isolation resistor-capacitor network etc.
3. Before returning the set to the customer, always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as terminals, screwheads, metal overlays, control shafts etc. to be sure the set is safe to operate without danger of electrical shock. Plug the AC line cord directly into a AC outlet (do not use a line isolation transformer during this check). Use an AC voltmeter having 5000Ω per volt or more sensitivity in the following manner: Connect a 1500Ω 10W resistor, paralleled by a $0.15\mu\text{F}$ AC type capacitor, between a known good earth ground (water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the AC voltage across the combination of 1500Ω resistor and $0.15\mu\text{F}$ capacitor. Reverse the AC plug at the AC outlet and repeat AC voltage measurements for each exposed metallic part. Voltage measured must not exceed 5.25V(rms) . This corresponds to 3.5 mA(AC) . Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the international hazard symbols on the schematic diagram and the parts list.

Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.

ULTRAVIOLET DANGER IN SERVICE MODE

Eye damage may result from directly viewing the light produced by the lamp used in this product. Always turn off lamp before opening this cover. Ultraviolet radiation eye protection required during servicing.

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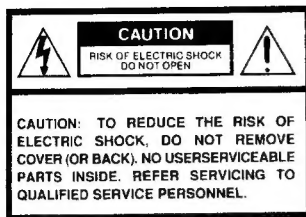
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SAFETY PRECAUTIONS



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. DANGEROUS HIGH VOLTAGES ARE PRESENT INSIDE THE ENCLOSURE. DO NOT OPEN THE CABINET. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

CAUTION: Laser beam is emitted when the laser button of the remote control is pressed. Do not look from the front of the remote control. Do not face toward a person or to a mirror.

<TLP450U, TLP451U, TLP650U and TLP651U>

FCC Radio Frequency Interference Statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiates radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING: Changes or modifications made to this equipment, not expressly approved by Toshiba, or parties authorized by Toshiba, could void the user's authority to operate the equipment.

Notice: This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

IMPORTANT PRECAUTIONS

Save Original Packing Materials

The original shipping carton and packing materials will come in handy if you ever have to ship your LCD projector. For maximum protection, repack the set as it was originally packed at the factory.

Avoid Volatile Liquid

Do not use volatile liquids, such as an insect spray, near the unit. Do not leave rubber or plastic products touching the unit for a long time. They will mar the finish.

Moisture Condensation

Never operate this unit immediately after moving it from a cold location to a warm location. When the unit is exposed to such a change in temperature, moisture may condense on the crucial internal parts. To prevent the unit from possible damage, do not use the unit for at least 2 hours when there is an extreme or sudden change in temperature.

In the spaces provided below, record the Model and Serial No. located at the rear of your LCD projector.

Model No. _____ Serial No. _____

Retain this information for future reference.

IMPORTANT SAFETY INSTRUCTIONS

CAUTION: PLEASE READ AND OBSERVE ALL WARNINGS AND INSTRUCTIONS GIVEN IN THIS OWNER'S MANUAL AND THOSE MARKED ON THE UNIT. RETAIN THIS BOOKLET FOR FUTURE REFERENCE.

This set has been designed and manufactured to assure personal safety. Improper use can result in electric shock or fire hazard. The safeguards incorporated in this unit will protect you if you observe the following procedures for installation, use and servicing. This unit is fully transistorized and does not contain any parts that can be repaired by the user.

DO NOT REMOVE THE CABINET COVER, OR YOU MAY BE EXPOSED TO DANGEROUS VOLTAGE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL ONLY.

1. Read Owner's Manual

After unpacking this product, read the owner's manual carefully, and follow all the operating and other instructions.



2. Power Sources

This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.



3. Source of Light

Do not look into the lens while the lamp is on. The strong light from the lamp may cause damage to your eyes or sight.



4. Ventilation

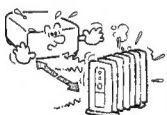
Openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.



IMPORTANT SAFETY INSTRUCTIONS

5. Heat

The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.



7. Cleaning

Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.



9. Overloading

Do not overload wall outlets; extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.



6. Water and Moisture

Do not use this product near water – for example, near a bath tub, wash bowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool and the like.



8. Power-Cord Protection

Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.



10. Lightning

For added protection for this product during storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet.

This will prevent damage to the product due to lightning and power-line surges.



IMPORTANT SAFETY INSTRUCTIONS

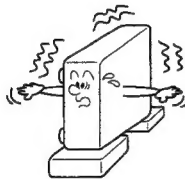
11. Object and Liquid Entry

Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.



12. Do not place the product vertically

Do not use the product in the upright position to project the pictures at the ceiling, or any other vertical positions. It may fall down and dangerous.



13. Stack Inhibited

Do not stack other equipment on this product or do not place this product on the other equipment. Top and bottom plates of this product develops heat and may give some undesirable damage to other unit.



14. Attachments

Do not use attachments not recommended by the product manufacturer as they may cause hazards.

15. Accessories

Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.

A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.



IMPORTANT SAFETY INSTRUCTIONS

16. Damage Requiring Service

Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- When the power-supply cord or plug is damaged.
- If liquid has been spilled, or objects have fallen into the product.
- If the product has been exposed to rain or water.
- If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
- If the product has been dropped or damaged in any way.
- If the product exhibits a distinct change in performance – this indicates a need for service.

17. Servicing

Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.



18. Replacement Parts

When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards. (Replacement of the lamp only should be made by users.)

19. Safety Check

Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.



20. Do not get your hands between the camera arm and the main unit when setting the camera arm back in its original position.

To avoid injury, be careful not to get your hands caught when setting the camera arm back in its original position. Families with children should be particularly careful.



IMPORTANT SAFETY INSTRUCTIONS

21. Do not carry by the camera arm.

Do not carry the projector by the camera arm.

Doing so can result in damage or injury.



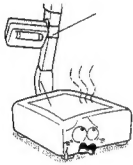
23. Do not move the projector while the arm is still erect.

Always store the arm back in position when moving the projector. Otherwise injury or damage may result.



22. Do not leave documents on the unit for long periods of time while using the document imaging function.

Do not leave texts, papers or other documents for projection on the unit for long periods of time. The heat could erase the letters on a thermal paper.



SECTION 1 PART REPLACEMENT AND ADJUSTMENT PROCEDURES

1. LOCATION OF MAIN PARTS

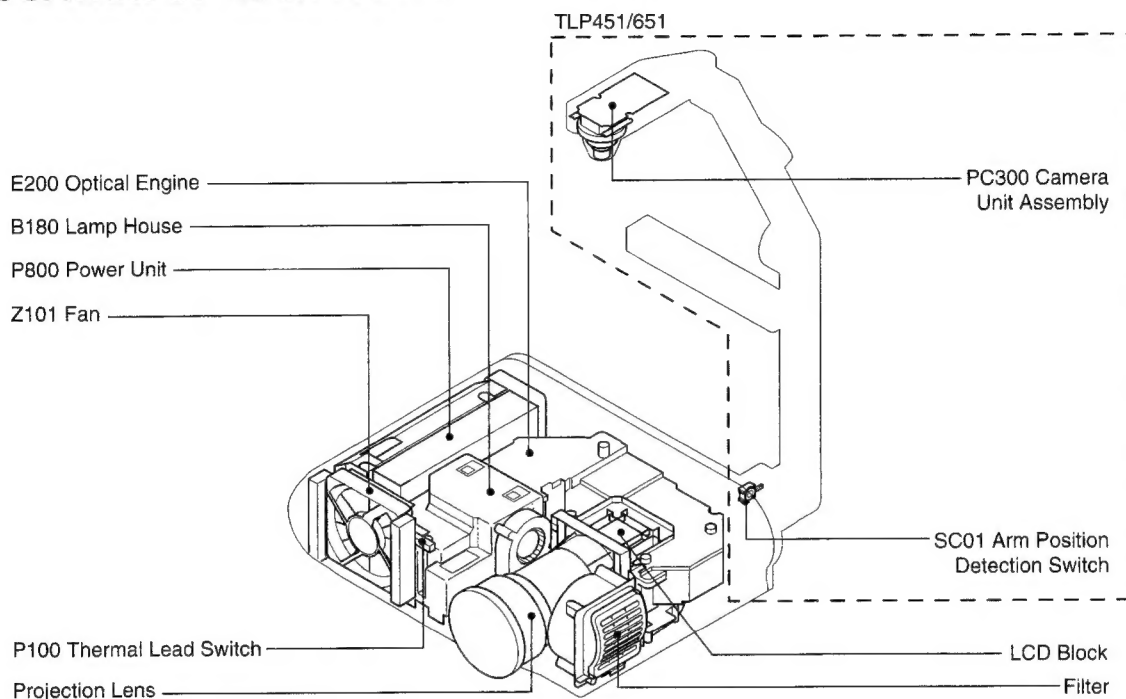


Fig. 1-1-1

2. LOCATION OF PC BOARDS

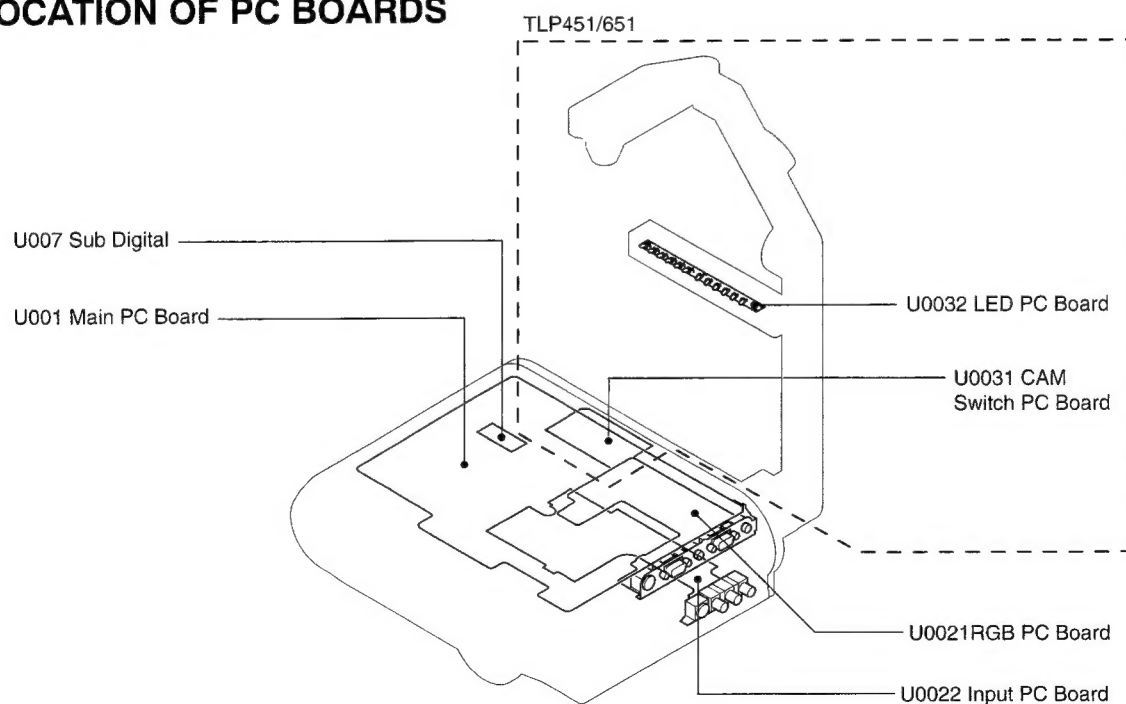


Fig. 1-2-1

CAUTIONS BEFORE STARTING SERVICING

Electronic parts are susceptible to static electricity and may easily be damaged, so do not forget to take a proper grounding treatment as required.

Many screws are used inside the unit. To prevent missing, dropping, etc. of the screws, always use a magnetized screwdriver in servicing. Several kinds of screws are used and some of them need special cautions. That is, take care of the tapping screws securing molded parts and fine pitch screws used to secure metal parts. If they are used improperly, the screw holes will be easily damaged and the parts can not be fixed.

3. REPLACEMENT OF MECHANICAL PARTS

3-1. Camera Arm Assembly (Only for TLP451/651)

1. Remove six screws (1) and remove the camera arm assembly (2).
2. Remove the connector (3) connecting to the main unit.

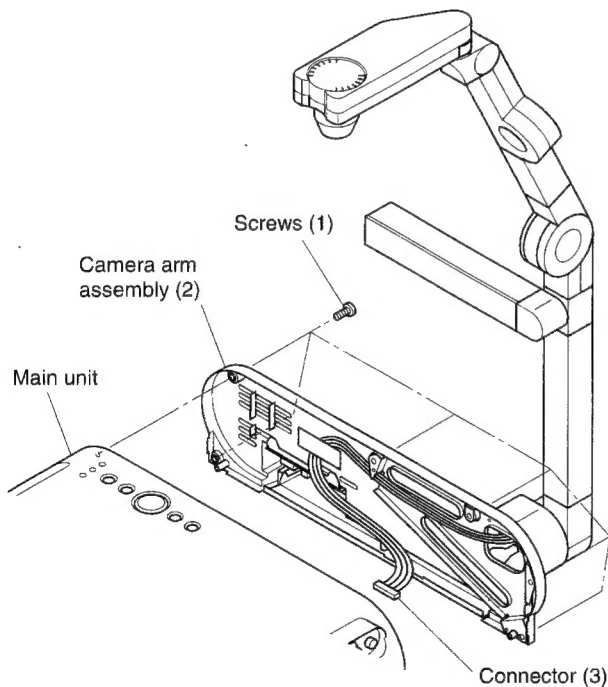


Fig. 1-3-1

3-2. Lamp Assembly

1. Loosen two screws (1) and remove the cover (2).
2. Pull down the handle to remove the lamp assembly (3).

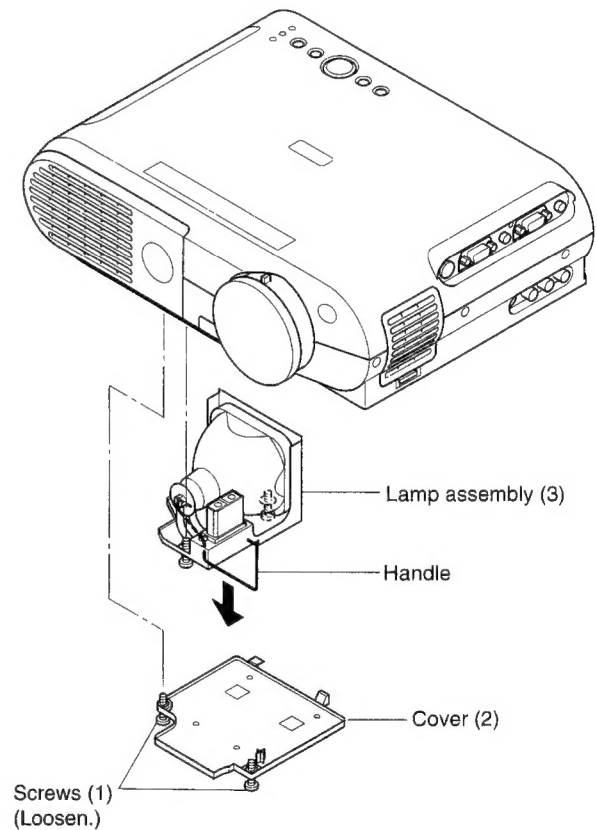


Fig. 1-3-2

3-3. Front Cover and Top Cover

1. Remove two screws (1) and remove the front cover (2) by sliding the portion A pushed with a thin bar in the arrow B direction.
2. Remove nine screws (3).
3. Push the handle (4) to one side and remove the top cover (5) by rotating in the arrow C direction.

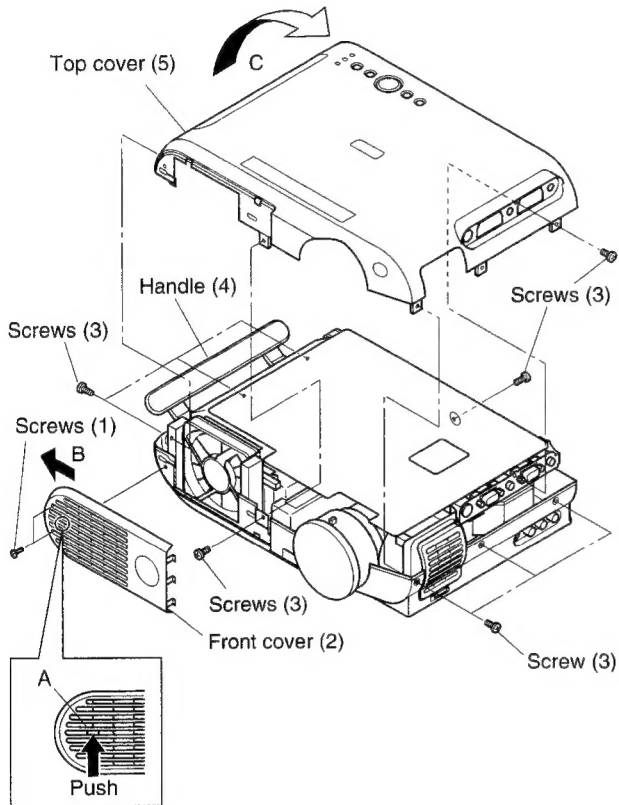


Fig. 1-3-3

3-4. Main PC Board

1. Remove four connectors (2) and five FFCs (3) connected to the main PC board (1).
2. Remove seven screws (4).
3. Lift the main PC board (1) upward and remove the main PC board (1) from the RGB PC board (5).

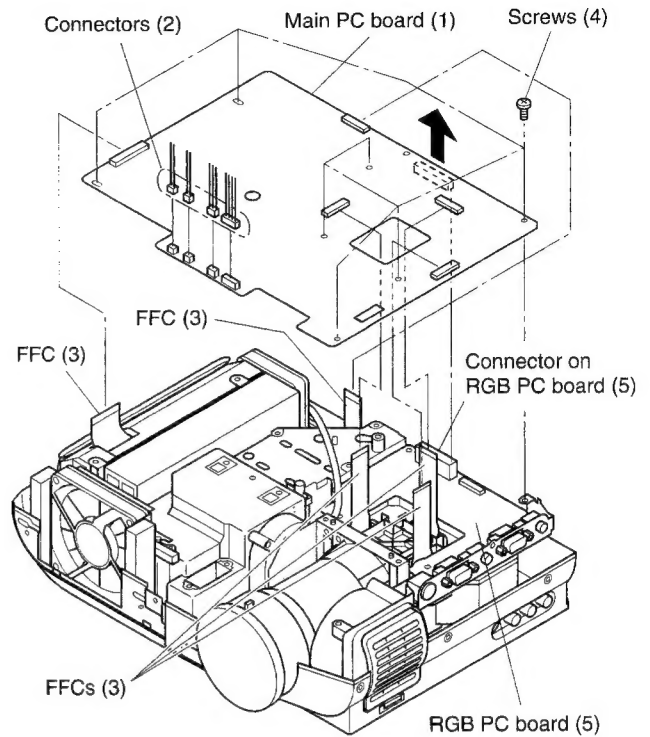


Fig. 1-3-4

3-5. RGB PC Board

1. Remove the FFC (1).
2. Remove four screws (2) and RGB PC board (3).
3. Remove four screws (4) and remove the cover (5) from the RGB PC board (3).

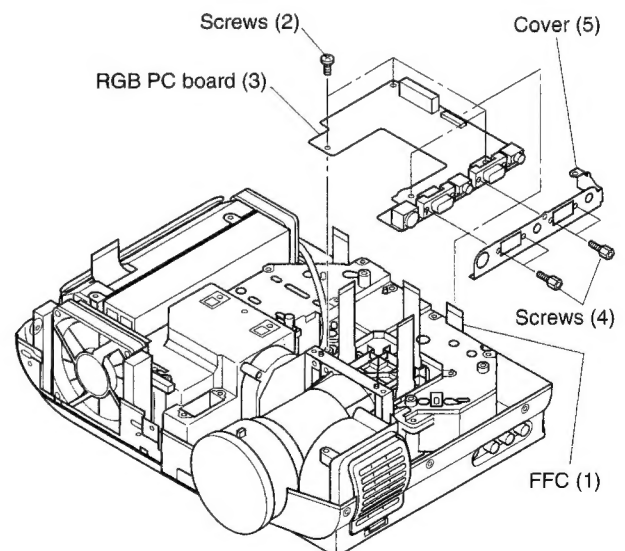


Fig. 1-3-5

3-6. Handle and Fan Assembly

1. Pull out the handle (1) upward.
2. Remove two screws (2) and fan assembly (3).
3. Remove two screws (4) and then remove the fan (5) from the fan bracket (6).

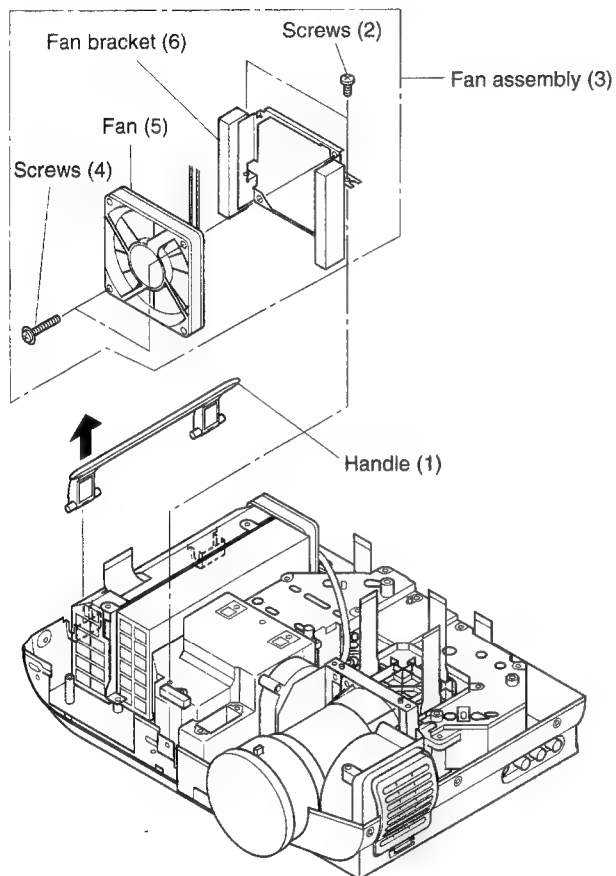


Fig. 1-3-6

3-7. Power Supply Unit

1. Remove two screws (1) and then remove the shield plate (2) and the socket (3). (Do not lose the shield plate (2).)
2. Remove two screws (4) and remove the power supply unit (5).
3. Remove two screws (6) and one screw (7) and remove the interlocking switch and plate (8).

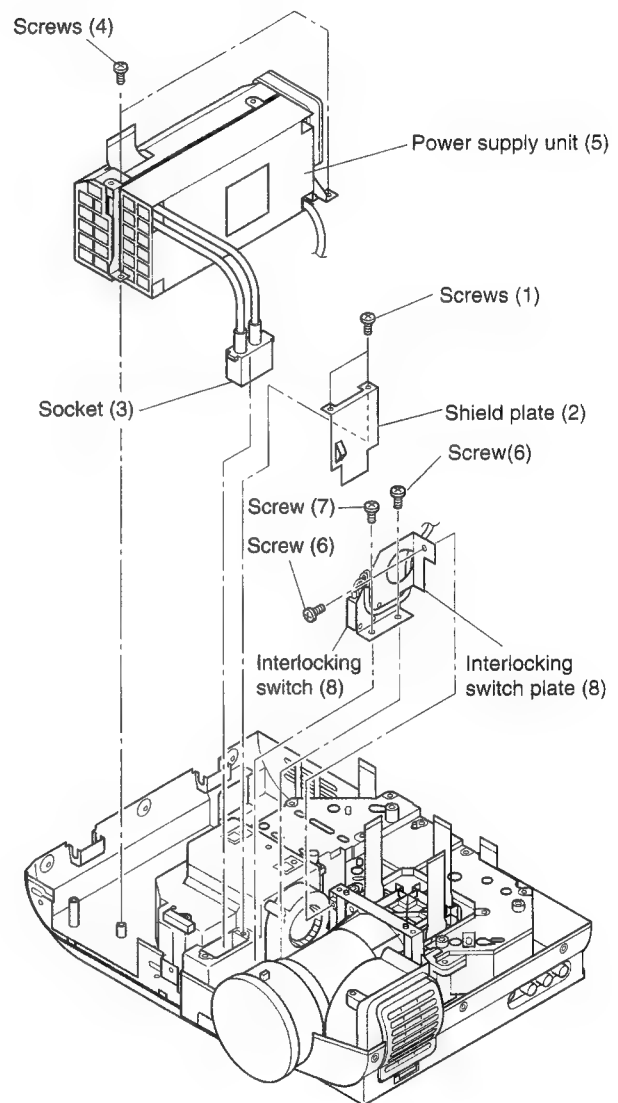


Fig. 1-3-7

3-8. Filter Assembly

1. Remove the filter cover (1) from the suction fan holder (2).
2. Remove the filters (3) and (4) from the filter cover (1). (When replacing and/or cleaning the filter, note the arrangement of the filters. Refer to Fig. A)
3. Remove two screws (5) and pull out the filter assembly (6) upward.
4. Remove two screws (7) and remove the fan (8).
5. Remove the suction fan mouse piece (9) from the suction fan holder (2).

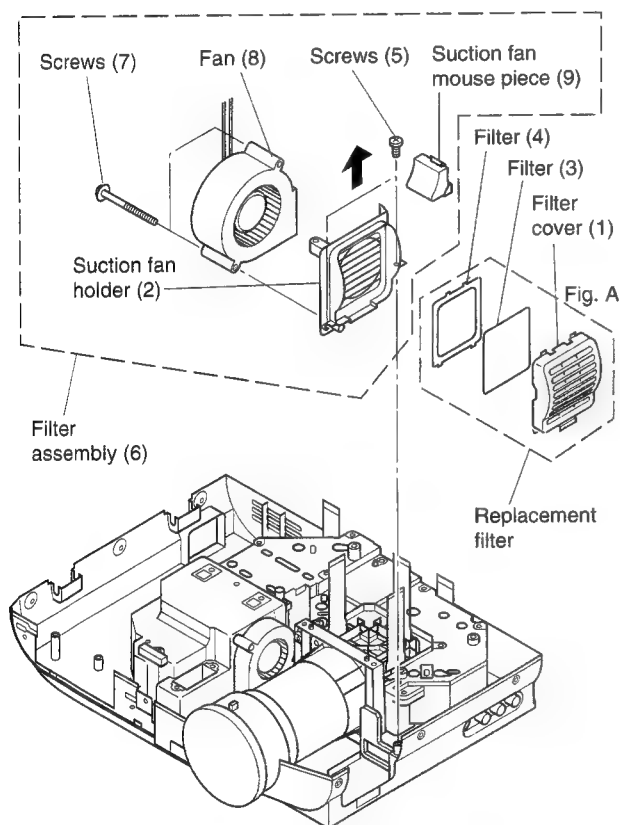


Fig. 1-3-8

3-9. Lamp House

1. Remove one screw (1) and (2) and then remove the lamp house (3).
2. Remove one screw (4) and then remove the temperature sensor switch (5).
3. Remove one screw (6) and then remove the fan (7).

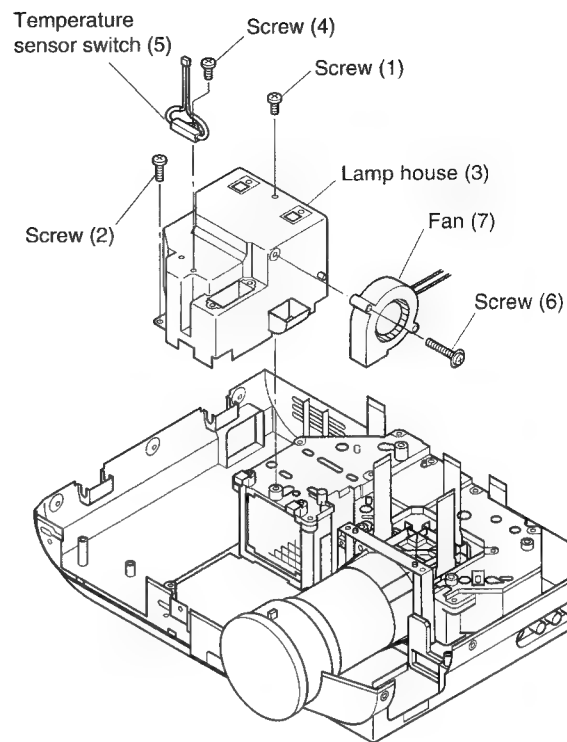


Fig. 1-3-9

3-10. Optical Engine

1. Remove four screws (1).
2. Remove the optical engine (2) by lifting upward.

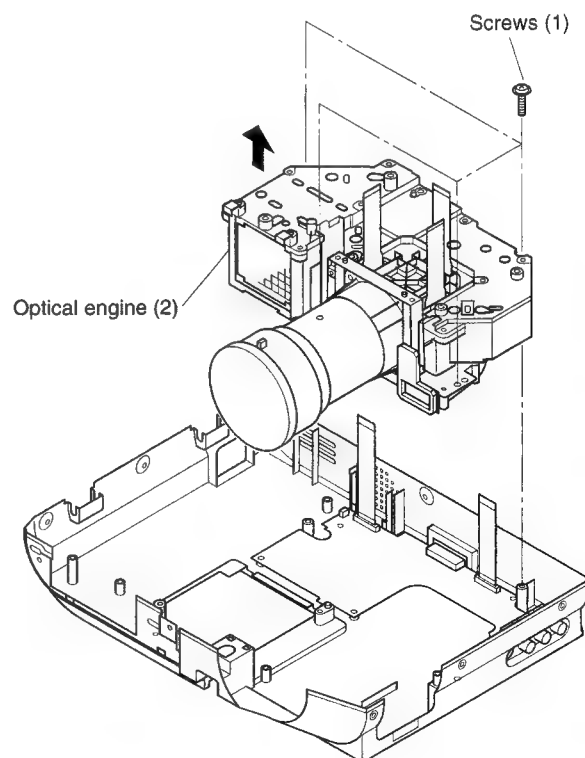


Fig. 1-3-10

3-11. Input PC Board

1. Remove five screws (1).
2. Remove the input PC board (2) by turning the arrow direction.

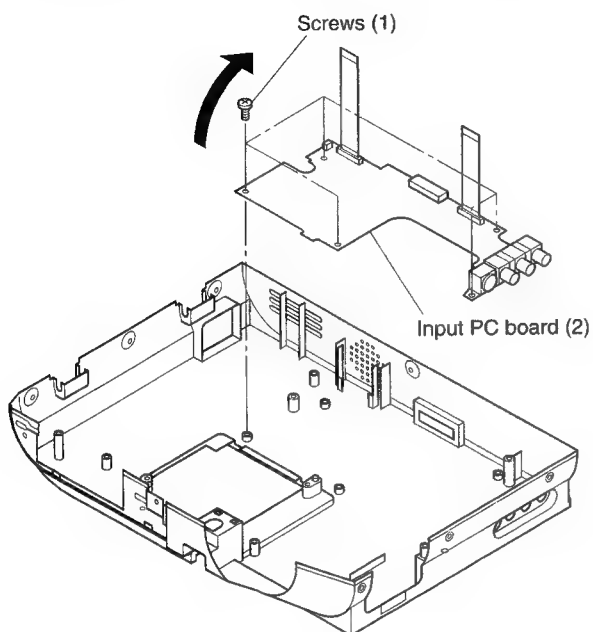


Fig. 1-3-11

3-12. Lens

1. Remove four screws (1) and then remove the lens (2).

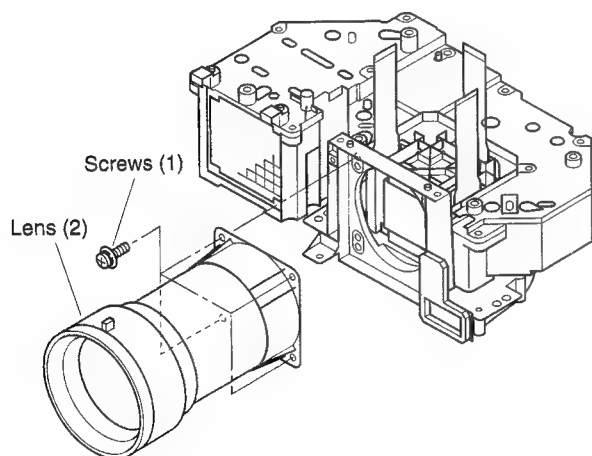


Fig. 1-3-12

3-13. Mirror Box

1. Remove three screws (1) and then remove the mirror box (2).

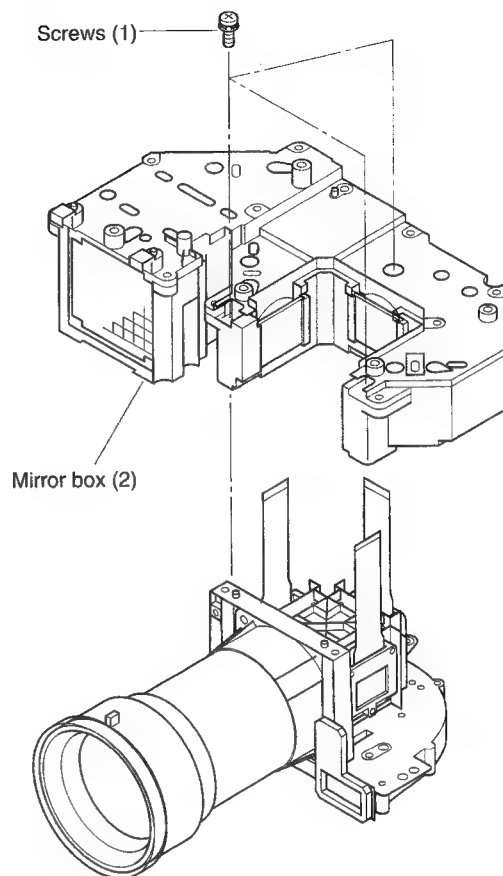


Fig. 1-3-13

3-14. LCD Block and LCD Panel

1. Remove three screws (1) and remove the LCD block (2).
2. Remove three screws (3) and remove the LCD panel (4).

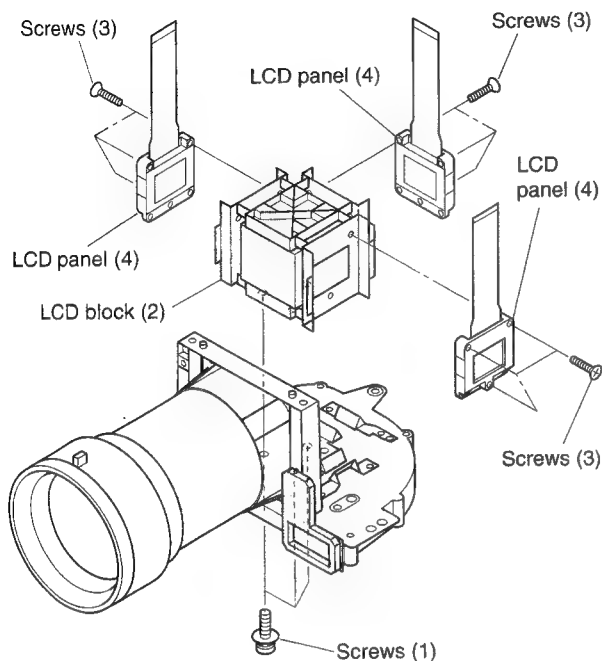


Fig. 1-3-14

3-14-1. Panel Replacement and Adjustment Procedures

< Replacement procedures >

1. Remove the prism block from the optical engine.
2. Remove the panel and the panel holder from the prism block. (Refer to Fig. 1-3-15.)

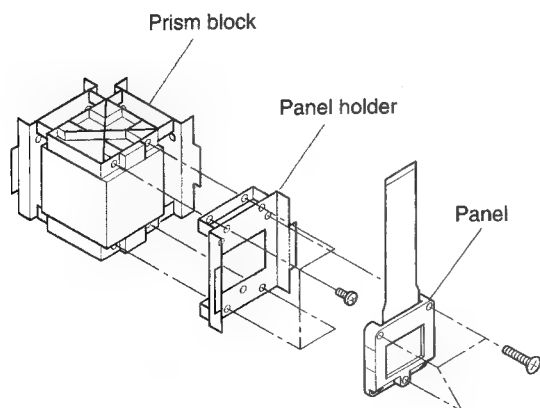


Fig. 1-3-15 Prism block exploded views

3. Mount a holder support for the service holder at the location of the panel holder removed. (Use screws removed in step 2.) (Refer to Fig. 1-3-16 for the following steps.)
4. Mount a new panel on the XY shifting plate with the Z rotation plate placed between them. (Use L upper and lower adjustment screws.) At this time, fix them so that two holes on the panel lower side are matched with the holes on the Z rotation plate.
5. Mount the Z rotation plate on the holder support. (Use S adjustment screws.) Tighten the S adjustment screws lightly.

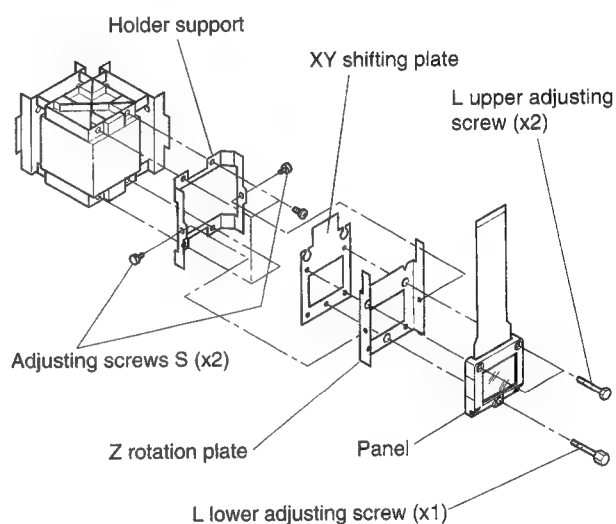


Fig. 1-3-16 Mounting view of a holder for service

< Panel adjustment procedures >

- carried out with a cross hatch signal (RGB input) received.

(1) Panel focus adjustment

- carried out with a single color (panel color replaced) status.
1. Shift the Z rotation plate by holding its handles located on the upper sides with fingers or a long-nose pliers, etc. and adjust to obtain the best focus at the whole screen. At this time, adjust the screen center focus by shifting the Z rotation plate entirely back and forth, the left/right screen focus balance by shifting the rotation plate to left/right rotation directions and the upper/lower screen focus balance by shifting it to upper/lower rotation directions.

2. Tighten the S adjusting screws with a wrench for servicing and fix the Z rotation plate. (Refer to Fig. 1-3-17.) If the focus adjusted is upset when fixing, loosen the S adjusting screws and perform the adjustment in step 1 again.

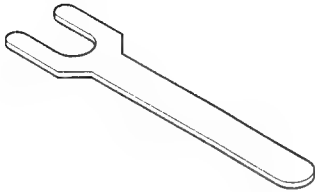


Fig. 1-3-17 Service wrench

3. Repeat the steps 1 and 2 until the Z rotation plate is fixed in the best focus condition. Finally, fix the Z rotation plate perfectly by tightening the S adjusting screws further with a long-nose plier, etc.

(2) Picture element adjustment (Convergence adjustment)

- Superimposing pictures on R and B panels with a picture on G panel.

1. Loosen the upper and lower L adjusting screws fixing the panel.
2. Shift the XY shifting plate by holding its upper portion with fingers or a long-nose plier, etc. and adjust to superimpose the picture on the panel replaced on that of the G panel.

For the relation between the picture and the XY shifting plate shifting directions, the picture shifts to the left when the XY shifting plate shifts to the left seeing from the incident side of the panel (the picture shifts to the right when the XY shifting plate shifts to the right direction.), and the picture shifts to the lower direction when the XY shifting plate shifts to the upper direction (the picture shifts to the upper direction, when the XY shifting plate shifts to the lower direction.).

3. Fix the panel by tightening the upper/lower L adjusting screws with a wrench for servicing. If a focus is upset when fixing the panel, loosen the upper/lower L adjusting screws and perform the step 2 again.
4. Repeat the steps 2 and 3 until the panel is fixed with the picture superimposed in the best condition.

< Holder fixing >

1. Apply screw lock to the S adjusting screws.
2. Fix the Z rotation plate and the holder support, and the Z rotation plate to the XY shifting plate by using a silicone bond at the appropriate locations.

3-14-2. Mirror Adjustment Procedures (After polarizing plate replacement)

1. Loosen screws fixing three mirror holder (WM, RM, BM).

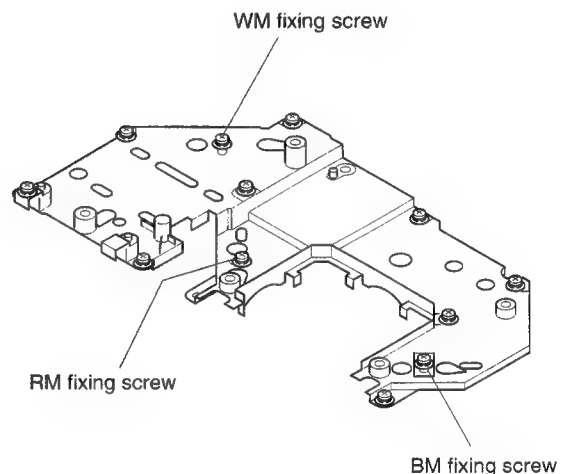


Fig. 1-3-18

2. Set G single color screen. Move the WM fixing screw along the long hole and fix it where the upper and lower edges of the screen does not show the dark band.
3. Set R single color screen. Fix the RM fixing screw in the same way as shown in step 2.
4. Set B single color screen. Fix BM fixing screw in the same way as shown in step 2.
5. Apply screw lock to each fixing screw. (For the screw lock position, refer to the figure shown below.)



Fig. 1-3-19

3-15. CAM SW PC Board (Only for TLP451/651)

1. Remove one screw (1) and remove the cover (2).
2. Remove four connectors (4) connected to the CAM SW PC board (3).
3. Remove two screws (5) and remove the CAM SW PC board (3).

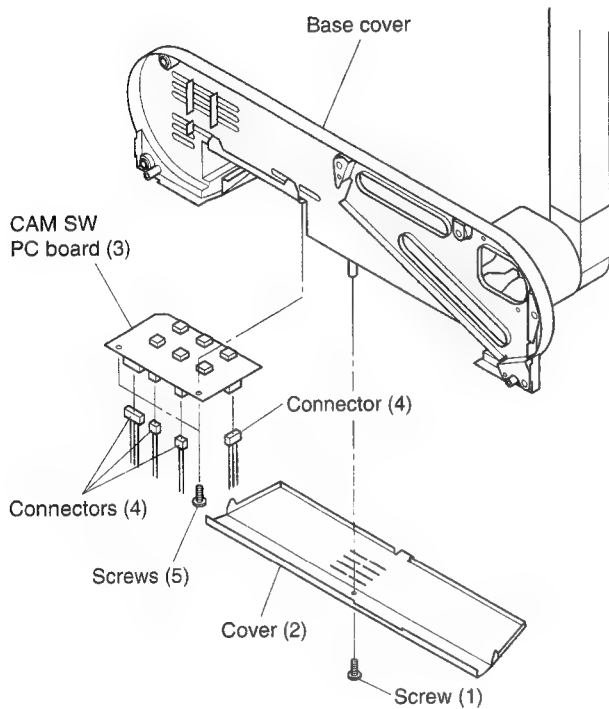


Fig. 1-3-20

3-16. Arm Assembly (Only for TLP451/651)

1. Remove three screws (1) and remove the arm assembly (2).
2. Pull out three connectors (3) connected from the arm assembly (2) from the base cover (4).

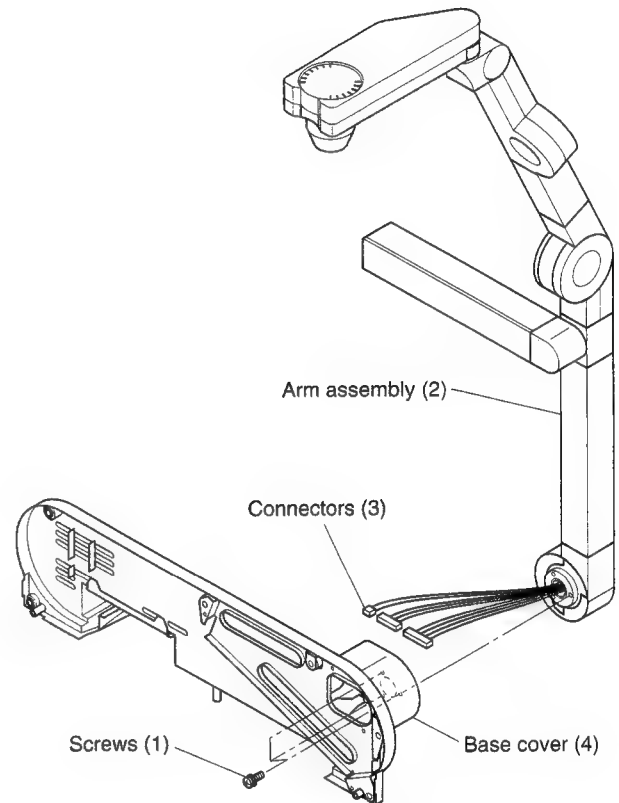


Fig. 1-3-21

3-17. Switch (Only for TLP451/651)

1. Remove two screws (1) and remove the base plate (2).
2. Remove one screw (3) and remove the switch (4).

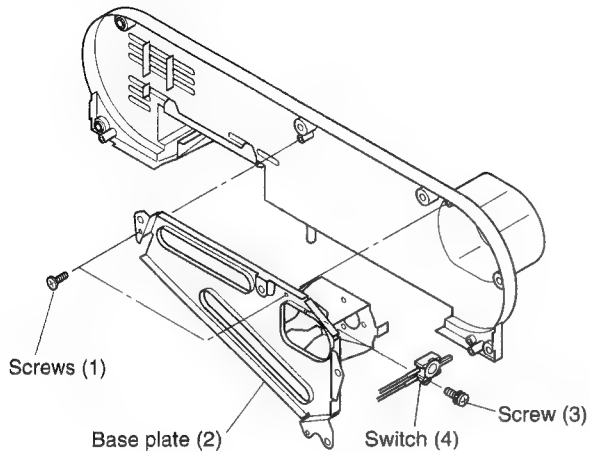


Fig. 1-3-22

3-19. Lamp PC Board (TLP451/651)

1. Remove the lamp cover (1).
2. Pull out the lamp PC board (2) in the arrow direction.
3. Unplug the connector (3).

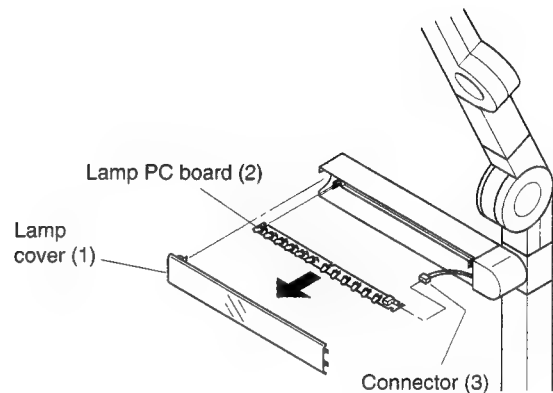


Fig. 1-3-24

3-18. Camera PC Board (Only for TLP451/651)

1. Remove four screws (1) and remove the cover (2).
2. Remove two connectors (3).
3. Remove two screws (4) and remove the camera block (5).
4. Remove the focus ring (6) by releasing the claws (A).
5. Remove two screws (7) and remove the camera base (9) from the camera PC board assembly (8).

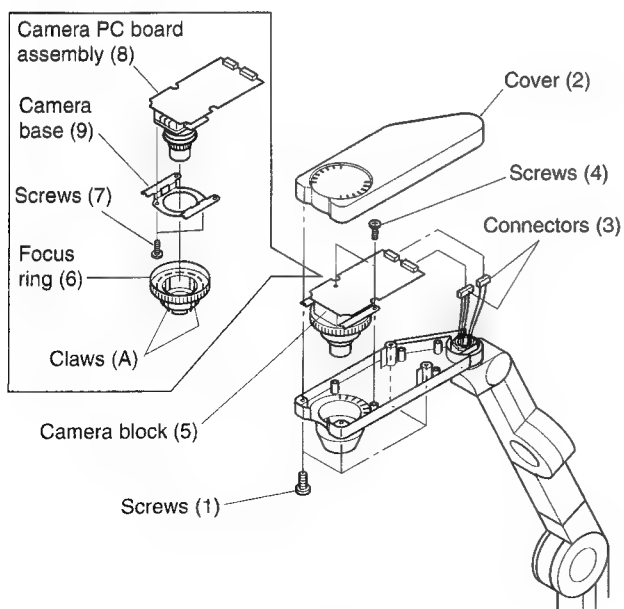


Fig. 1-3-23

4. ELECTRICAL ADJUSTMENT

< Test Equipments and Test Jigs >

- Oscilloscope
- Digital voltmeter
- Adjustment software TLP65CTLS.EXE
- Color luminance meter (BM-5)
- Personal computer
- Signal generator
- Multi-point luminance meter

< Connection and Setting of Personal Computer >

(1) Connection of personal computer

- 1) Connect a computer as shown in Fig. 1-4-1, and then perform the adjustment using the adjustment software TLP65CTLS.EXE. (When using a drive C, type C: ¥TLP65CTLS.EXE and press enter key.)

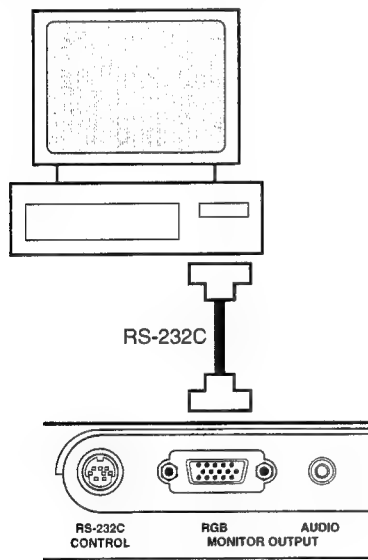


Fig. 1-4-1

(2) Adjustment software usage

The electrical adjustment is carried out by using the adjustment software. For the adjustment command items in the adjustment procedures, set the command by referring the following contents.

First, start the software and select the "Drive" tab. Then the following display appears.

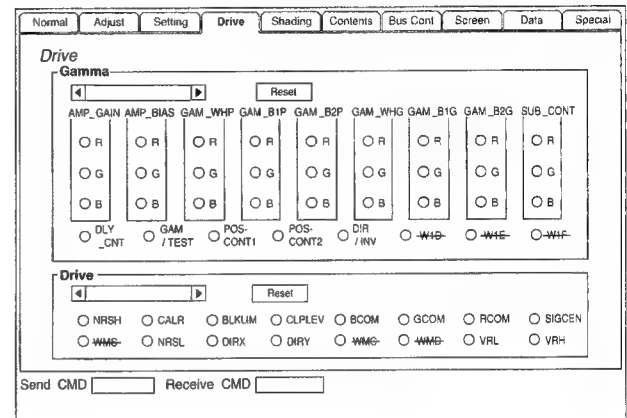


Fig. 1-4-2

The adjustment command setting enables to be carried out by clicking radio button(s) on this screen. The following list shows the adjustment command setting. By referring to the list, set the adjustment command.

	AMP_GAIN	AMP_BIAS	GAM_WHP	GAM_B1P	GAM_B2P	GAM_WHG	GAM_B1G	GAM_B2G	SUB_CONT
R	W00	W03	W06	W09	W0C	W0F	W12	W15	VGR
G	W01	W04	W07	W0A	W0D	W10	W13	W16	VGG
B	W02	W05	W08	W0B	W0E	W11	W14	W17	VGB

DLY_CNT	GAM/TEST	POS_CONT1	POS_CONT2	DIR/INV
W18	W19	W1A	W1B	W1C

NRSH	CALR	BLKLIM	CLPLEV	BCOM	GCOM	RCOM	SIGCEN	NRSL	DIRX	DIRY
WM0	WM1	WM2	WM3	WM4	WM5	WM6	WM7	WM9	WMA	WMB

4-1. LCD Drive Adjustment

- Save the data in each step.

Table 1-4-1

() : confirmation only.

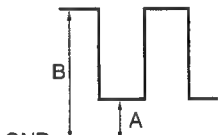
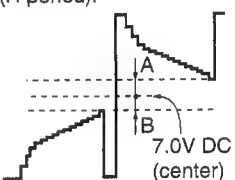
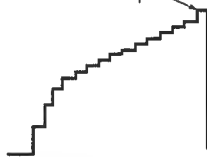
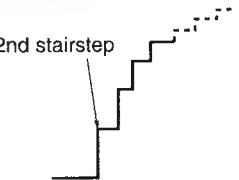
Adjust Items	Input Signal	Test Equipment	Test Point	Adjust mode	Adjust Value	Note
1. Input level check						
1-1. Input level adjustment of RGB signals	16-stairstep waveform	Oscilloscope	TP701 (R) TP702 (G) TP703 (B)	VGR VGG VGB	• $1.2V \pm 20 \text{ mV}$ between pedestal and white level of 16th stairstep waveform.	• RGB input. • Trigger the scope at TP901 (H period).
1-2. Input level adjustment of video signal	Gray scale or stairstep waveform	Oscilloscope	TP701 TP702 TP703	VGR VGG VGB	• $1.15V \pm 20 \text{ mV}$ between pedestal and white peak level.	• Video input. • Trigger the scope at TP901 (H period).
1-3. Input level adjustment of Y/Pb/Pr signal	Gray scale or stairstep waveform	Oscilloscope	TP701 (R) TP702 (G) TP703 (B)	VGR VGG VGB	• $1.15V \pm 20 \text{ mV}$ between pedestal and white peak level.	• Trigger the scope at TP901 (H period). • Select "Y/Pb/Pr" in "RGB input" on "Setting" menu of the adjustment software.
2. NRS adjustment						
2-1. Vertical stripe adjustment	Window signal with all white 50% in peripherals and all black at center.	Oscilloscope	TP403 (R) TP503 (G) TP603 (B)	WM0	• Adjust so that the vertical stripe disappears. Adjust at TP503.	 <p>A = Approx. 1.6V B = 5.5V to 8.0V</p>
2-2. NRS level confirmation	Window signal with all white 50% in peripherals and all black at center.	Oscilloscope	TP403 (R) TP503 (G) TP603 (B)	(WM9)	• Confirm the base level of the amplitude should be approx. 1.6V.	
3. Center voltage adjustment	16-stairstep waveform	Oscilloscope	TP402 (R) TP502 (G) TP602 (B)	WM7	• Adjust for A = B as shown in illustration right.	 <p>7.0V DC (center)</p>
4. Gamma adjustment						
4-1. RGB bias adjustment	16-stairstep waveform	Oscilloscope	TP402 (R) TP502 (G) TP602 (B)	W03 W04 W05	• Adjust the 16th stairstep waveform for following values: $5.65 \pm 20 \text{ mV}$	 <p>16th stairstep</p>
4-2. RGB black gamma adjustment	16-stairstep waveform	Oscilloscope	TP402 (R) TP502 (G) TP602 (B)	W0C W0D W0E	• Adjust the 2nd stairstep waveform for following values: $2.6V \pm 20 \text{ mV}$	 <p>2nd stairstep</p>
4-3. Ghost adjustment	SMPTE signal	—	—	(W1A)	• If ghost is high, adjust in W1A mode.	

Table 1-4-2




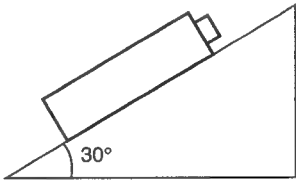
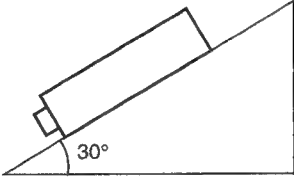
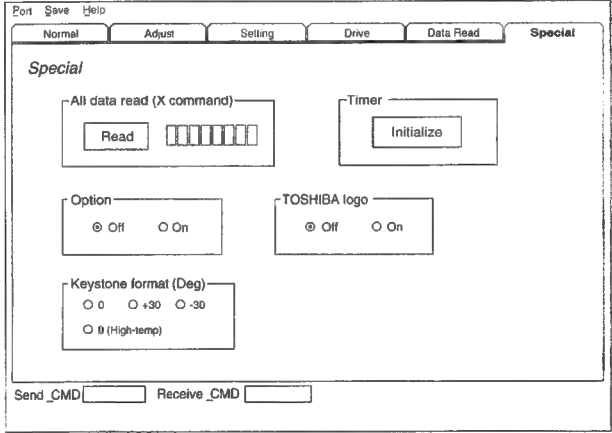
Adjust Items	Input Signal	Test Equipment	Test Point	Adjust mode	Adjust Value	Note
5. Gamma correction at video input 5-1. Video bias adjustment	10-stairstep waveform	Oscilloscope	TP402 (R) TP502 (G) TP602 (B)	W03 W04 W05	<ul style="list-style-type: none"> Adjust the 10th stairstep waveform for following values: $5.3 \pm 20 \text{ mV}$ 	 <ul style="list-style-type: none"> Trigger the scope at TP901 (H period).
5-2. Video black gamma adjustment	10-stairstep waveform	Oscilloscope	TP402 (R) TP502 (G) TP602 (B)	W0C W0D W0E	<ul style="list-style-type: none"> Adjust the second stairstep waveform for following values: $2.75 \pm 20 \text{ mV}$ 	 <ul style="list-style-type: none"> Trigger the scope at TP901 (H period).
5-3. Ghost adjustment	Retma signal	—	—	(W1A)	<ul style="list-style-type: none"> If ghost is high, adjust in W1A mode. 	
6. Common voltage adjustment 6-1. Common voltage adjustment 1	Adjustment signal	Oscilloscope, confirm on the screen.	—	WM4 WM5 WM6	<ul style="list-style-type: none"> Select "Standard" in Projection mode on "Setting" menu. Adjust so that the flicker for each R, G, B signal becomes minimum. 	
6-2. Common voltage adjustment 2	Adjustment signal	Oscilloscope, confirm on the screen.	—	WM4 WM5 WM6	<ul style="list-style-type: none"> Invert Up/Down contents displayed on the screen. Select "Rear Ceiling" in Projection mode on "Setting" menu. Adjust so that the flicker for each R, G, B signal becomes minimum. After adjustment, click the standard button (PJ0) on the setting screen and return to the standard status. 	

Table 1-4-3

Adjust Items	Input Signal	Test Equipment	Test Point	Adjust mode	Adjust Value	Note
7. White balance adjustment	All white 50% signal 10-stairstep video signal 16-stairstep RGB signal	Color luminance meter (BM-5)	Shown below	W03 W04 W05	• Shown below.	
						<ol style="list-style-type: none"> 1. Lay the unit in a dark room and input all white 50% signal, video 10-stairstep signal or RGB 16-stairstep signal. 2. Affix the standard white board WS-2 on the top center of screen, or suspend it adjacent to the screen from above. 3. Set the color luminance meter (BM-5) with more than 30 min. heat-run operation performed, so that color temperature on the WS-2 can be measured. 4. Measure the color temperature by using the BM-5 and adjust with W03 and W05 in the adjustment menu to obtain the value within the range of $X = 0.285 \pm 0.01$ and $Y = 0.310 \pm 0.01$. <p>Adjustment standard</p> <ol style="list-style-type: none"> a. Adjust Y by using in W05 mode. b. Adjust X by using in W03 mode. <p>Color temperature: 8500 duv...less than 0.005</p> <ol style="list-style-type: none"> 5. Input all white 100% signal. Measure the luminance and the color temperature and record them. 6. Perform the steps 1 to 4 for the video input. 7. Enter 16 steps at RGB input and 10 steps at Video input. Then check the color temperature on black side and adjust W0C and W0E if required. (Adjustment range should be within ± 3 steps.)
8. White level adjustment at RGB input	Window signal with center 98% and peripheral 100%.	—	—	W03 W04 W05	• Adjust W03, W04 and W05 in the same way (modifying the same data amount) so that 98% white appears a little.	

- Perform the following adjustment when replacing the main PC board (PB9061) and/or the microprocessor QXXX.

Table 1-4-4

Adjust Items	Input Signal	Test Equipment	Test Point	Adjust mode	Adjust Value	Note
9. Slantness sensor correction data setting	—	—	—	—	—	
	<div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p>Fig. 1</p> </div> <div style="text-align: center;">  <p>Fig. 2</p> </div> <div style="text-align: center;">  <p>Fig. 3</p> </div> </div> <ol style="list-style-type: none"> 1. Leave the unit for more than 3 hours to cool down enough. 2. Connect TLP450/451/650/651 to a personal computer by using a RS-232 cable. Set TLP450/451/650/651 in the standby status. 3. Start the slantness sensor correction data setting software (menu) on the personal computer. <div style="text-align: center; margin: 20px 0;">  <p>Fig. 4</p> </div> <ol style="list-style-type: none"> 4. Place TLP450/451/650/651 to be adjusted horizontally on a flat table and click "0" of keystone format (Deg) on the menu and store the data at the horizontal position. (Refer to Fig. 1.) 5. Place TLP450/451/650/651 to be adjusted on a table with 30 degrees slanted and its projection lens directed upward. Then click "+30" of keystone format (Deg) on the menu and store the data of +30 degrees position. (Refer to Fig. 2.) 6. Place TLP450/451/650/651 to be adjusted on a table with 30 degrees slanted and its projection lens directed downward. Then click "-30" of keystone format (Deg) on the menu and store the data of -30 degrees position (Refer to Fig. 3.). At this time, the data is written on the flash ROM of the TLP450/451/650/651. 7. After heat-running for more than 1 hour with the power turned on, place TLP450/451/650/651 horizontally and click "0 (High-temp)" of keystone format (Deg) to save the horizontal position data at high temperature. 8. Stretch the height adjusting legs on the front side of TLP450/451/650/651 fully, turn on the projector and start projecting on the screen. Adjust the focus roughly and push the automatic keystone button on the remote controller. Check to see the image projected is more rectangular with less trapezoidal in comparison with the shape before pushing the keystone button. 					

5. LED DISPLAY

X: Lighting off, Color: Contents shown by lighting in the color, (Color): Contents shown by blinking in the color

Table 1-5-1 Normal operation

Status	Power	Lamp	Temp	Contents	Remarks	Additional notice
Normal	Orange	X	X	Standby status	At normal power off	
Normal	Green	X	X	Power on	Various power on	
Normal	Green	(Green)	X	Lamp is heating up.	Lamp power is being confirmed.	
Normal	Green	Green	X	Lamp lighting	At normal power on	
Normal	Orange	Green	X	Power off	Various power off	
Normal	Orange	(Green)	X	Lamp is cooling down.	For approx. 1 min. (Impossible to light on again.)	

Table 1-5-2 Error operation

Status	Power	Lamp	Temp	Contents	Remarks	Additional notice
Error	Red	X	X	Main power error	Only at power on.	
Error	Red	Red	X	Lamp not lighting	Only at power on.	
Error	Red	Orange	X	Lamp fan stop	Only at power on.	Operation is carried out below 30 °C in the old control.
Error	Red	X	(Red)	Suction fan stop	Only at power on.	Operation is carried out below 30 °C in the old control.
Error	Red	X	(Orange)	Exhaust fan stop	Only at power on.	Operation is carried out below 30 °C in the old control.
Error	Red	X	(Green)	Filter open	Only at power on.	Not used in the current control.
Error	Red	X	Red	Temperature sensor 1 abnormality	Only at power on.	
Error	Red	X	Orange	Temperature sensor 2 abnormality	Only at power on.	

SECTION 2

SERVICING DIAGRAMS

1. PART CONFIGURATION AND THEIR SYMBOLS

1-1. Replacing Subminiature "CHIP" Parts

1-1-1. Required Tools:

1. Fine tipped, well insulated soldering "pencil", about 30 Watts.
2. Tweezers.
3. Blower type hair dryer.

1-1-2. Soldering Cautions:

1. Do not apply heat for more than 3s.
2. Avoid using a rubbing stroke when soldering.
3. Discard removed chips; do no reuse them.
4. Supplementary cementing is not required.
5. Use care not to scratch or otherwise damage the chips.

1-1-3. Removal (Resistors, Capacitors, etc.):

1. Melt the solder at one side.

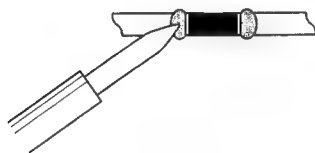


Fig. 2-1-1

2. Grasp the part with tweezers and melt the solder at the other side.

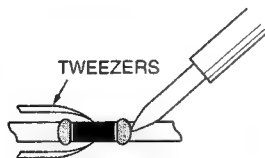


Fig. 2-1-2

3. Remove the part with a twisting motion.

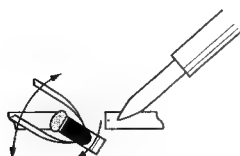


Fig. 2-1-3

1-1-4. Removal (Transistors, Diodes, etc.):

1. Melt the solder of one lead.

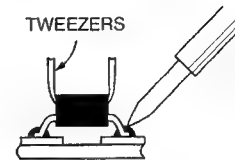


Fig. 2-1-4

2. Lift the side of that lead upward.

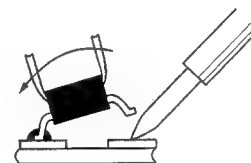


Fig. 2-1-5

3. Simultaneously heat solder the two remaining leads and lift part to remove.

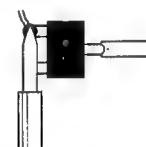


Fig. 2-1-6

1-1-5. Preheating (Except for semiconductors):

Immediately before installing new resistors or capacitors, use a blower type hair dryer and preheat the part for about two min. at approximately 150°C.

1-1-6. Replacement:

1. Presolder the contact points of the circuit pattern.

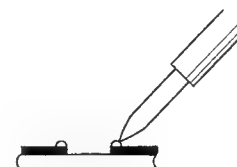


Fig. 2-1-7

2. Press the part downward with tweezers and apply the soldering pencil as indicated in the figure.

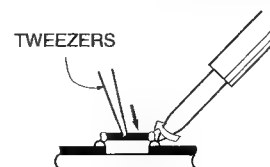


Fig. 2-1-8

1-2. Precautions for Part Replacement

- In the schematic diagram, parts marked Δ (ex. Δ F801) are critical part to meet the safety regulations, so always use the parts bearing specified part codes (SN) when replacing them.
- Using the parts other than those specified shall violate the regulations, and may cause troubles such as operation failures, fire etc.

1-3. Solid Resistor Indication

Unit	None Ω k $k\Omega$ M $M\Omega$
Tolerance	None $\pm 5\%$ B $\pm 0.1\%$ C $\pm 0.25\%$ D $\pm 0.5\%$ F $\pm 1\%$ G $\pm 2\%$ K $\pm 10\%$ M $\pm 20\%$
Rated Wattage	(1) Chip Parts None 1/16W (2) Other Parts None 1/6W Other than above, described in the Circuit Diagram.
Type	None Carbon film S Solid R Oxide metal film W Metal film W Cement FR Fusible

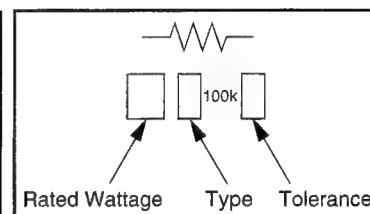


Fig. 2-1-9

1-4. Capacitance Indication

Symbol	$\text{---} \text{ } \text{---}$ Electrolytic, Special electrolytic $\text{---} \text{ }^{\text{NP}} \text{---}$ Non polarity electrolytic $\text{---} \text{ } \text{---}$ Ceramic, plastic $\text{---} \text{ }^{\text{M}} \text{---}$ Film $\text{---} \text{ } \text{---}$ Trimmer
Unit	None F μ μF p pF
Rated voltage	None 50V For other than 50V and electrolytic capacitors, described in the Circuit Diagram.
Tolerance	(1) Ceramic, plastic, and film capacitors of which capacitance are more than 10 pF. None $\pm 5\%$ or more B $\pm 0.1\%$ C $\pm 0.25\%$ D $\pm 0.5\%$ F $\pm 1\%$ G $\pm 2\%$ (2) Ceramic, plastic, and film capacitors of which capacitance are 10 pF or less. None more than $\pm 5\%$ pF B ± 0.1 pF C ± 0.25 pF (3) Electrolytic, Trimmer Tolerance is not described.
Temperature characteristic (Ceramic capacitor)	None SL For others, temperature characteristics are described. (For capacitors of $0.01 \mu\text{F}$ and no indications are described as F.)

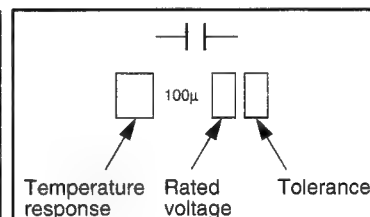


Fig. 2-1-10

1-5. Inductor Indication

Unit	None H μ μH m mH
Tolerance	None ±5% B ±0.1% C ±0.25% D ±0.5% F ±1% G ±2% K ±10% M ±20%
Type	PL Peaking For other, model name is described.

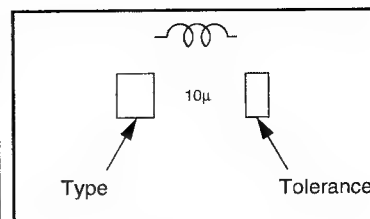


Fig. 2-1-11

1-6. Waveform and Voltage Measurement

- Measurement of waveform and voltage at each section in the color circuits was conducted with sufficient service color bar signal being received and reproduced in normal conditions.
- Waveforms and voltage values for the remaining circuit were measured with a broadcasting signal normally received, so they may vary slightly according to the programs being received. Use them as a measure for servicing.
- All voltage values except the waveforms are expressed in DC and measured by a digital voltmeter.

2. EACH SIGNAL FLOW

2-1. Operation at RGB Signal Input

The RGB signal is entered from PB001 on the RGB PC board and sent to the main PC board after passing through the MUTE circuit and the low pass circuit. The low pass circuit is provided to prevent a moire from occurring when the real sampling operation is not executed. Usually, a selector selects a signal not passed through the low pass filter, but selects the signal passed through the low pass filter since the real sampling is not carried out for a signal higher than SXGA85 Hz. The RGB signal entered passes through a buffer and develops PB003.

In the main PC board, the RGB input signal is converted to a digital signal in A/D+PLL (QD300). The A/D converter is used in the parallel mode, so the output becomes 16 bits per 1 channel and its clock rate is a half of the sampling clock. The digital RGB signal is enlarged or reduced by the scaller (QD500) and converted into a format of $f_v=60\text{Hz}$, panel resolution (TLP65x: 1024 x 768, TLP45x: 800 x 600). The scaller output signal is a RGB signal of 10 bits per 1 channel, converted into the analog signal by the D/A converter and fed to the drive circuit. The scaller (QD500) also performs the contrast/brightness control and keystone correction in addition to the enlargement or reduction process for the video signal entered.

The clock signal for the input system is generated in the A/D+PLL (QD300) and that for LCD panel drive system is in the 2nd PLL (QD402) circuit.

In the drive circuit, the pre-driver circuit amplifies the signal and performs a gamma correction. The correction signal sent from the color uniformity correction IC (Q971) enters the BIAS control terminal of the pre-driver (Q701) and the color uniformity is corrected by entering the correction signal corresponding to the screen position of the input signal. The signal corrected in the gamma is inverted its polarity and sampled & held in six phase signals by the sample & hold IC (Q401, Q501, Q601) and then fed to the LCD panel. The XGA panel used for TLP650/651 employs 12 phase driving system, so two sample & hold ICs are used per one channel. (Since TLP450/451 employs 6 phase driving system, one sample & hold IC is used per one channel.)

The panel driving timing signal is generated in the timing generator IC (Q203) with a clock signal and HD/VD signal supplied from the digital circuit. The Up/Down and Left/Right display inversion on the LCD panel (for ceiling mounting and rear projection status) is carried out by changing the timing signal generated by the timing generator. The timing signal used for this LCD panel requires a 15V in the amplitude, so the signal is converted into the timing signal of 15V amplitude by the level shifter and drives the LCD panel. The drive circuit operation is carried out in the same way regardless of the kinds of input signals. So the operation description for other input signals is omitted.

2-2. Video Signal

The video signals, S-video and composite video signals, are sent to the main PC board in passing through the input PC board through the connector and the buffers.

The signal sent to the main PC board enters the video decoder IC (QD200) and the decoder develops 8 bit signal (27 MHz clock) multiplexed with the Y/Cb/Cr components. The signal switching between S-video and composite video signals is carried out by a selector built-in the video decoder. The Y/Cb/Cr signal input for the scaller IC are 8 bit Y signal + 8 bit Cb/Cr signal. The 8 bit Y/Cb/Cr signal (27 MHz) in QD405 is converted into a 16 bit Y signal + Cb/Cr signal (13.5 MHz) and enters the scaller IC. In the scaller IC, the digital matrix circuit converts the Y/Cb/Cr signal into the R/G/B signals.

After that, the signal process is carried out in the same way as those for the RGB signal input. That is, the keystone correction, enlargement/reduction process and contrast/brightness control are carried out and fed to the drive circuit.

The process relating to the sync is also carried by the video decoder IC and the clock signal for input system is also generated.

Furthermore, when the video signal of $f_v=50\text{Hz}$, such as PAL signal, etc. enters, the panel drive operation is carried out by using the signal of $f_v=50\text{Hz}$.

2-3. Operation at Y/Pb/Pr Signal and HDTV Signal Input

Y/Cb/Cr signal (DVD player output) or HDTV signal enters from PB001 and reaches the A/D converter (QD100) for Y/Cb/Cr (Y/Pb/Pr) signal after passing through the low pass circuit. The A/D converter develops 16 bit signal of 8bit Y signal + 8bit Cb/Cr (Pb/Pr) and enters the scaller IC through the selector for the signal and that from the video decoder inside QD405. The process following to the scaller IC is the same as that of the video signal process.

The process relating to the sync process at Y/Cb/Cr signal (DVD player output) input (clock generation) is carried out by the video decoder and the clock generation at HDTV signal input is by the A/D+PLL (QD300).

2-4. Camera Input Operation

A camera input enters the A/D converter for Y/Cb/Cr (Y/Pb/Pr) signal through an exclusive connector and is processed as a Y/Cb/Cr signal input. The camera signal is a Y/Cb/Cr signal of fh=11.8 kHz and fv=15 Hz.

The clock generation is carried out in the A/D+PLL (QD300).

2-5. Camera Overlay Signal

The camera overlay signal usually enters the A/D converter for Y/Cb/Cr signal (Y/Pb/Pr) through an exclusive connector in the same way as that of camera input.

The A/D converter output enters QD405 and the red and blue components of the signal are extracted by the level slice circuit. Thus processed signal is converted into the signal synchronizing with the LCD panel output timing by using a memory (QD46). Then the signal is overlapped with the on-screen signal and the signal overlapped is fed to the on-screen signal input of the scaller IC, and overlapped with the main video output signal. At this time, the clock generation for overlay signal input system is carried out by the PLL circuit exclusive for the overlay.

As described above, the A/D converter for Y/Cb/Cr (Y/Pb/Pr) signal is used for the overlay signal input, so the signal which is usually processed by the A/D converter for Y/Cb/Cr (Y/Pb/Pr) signal, that is, Y/Cb/Cr signal (DVD player output), cannot be overlaid at the HDTV signal input.

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3. BLOCK DIAGRAMS

3-1. RGB Block Diagram

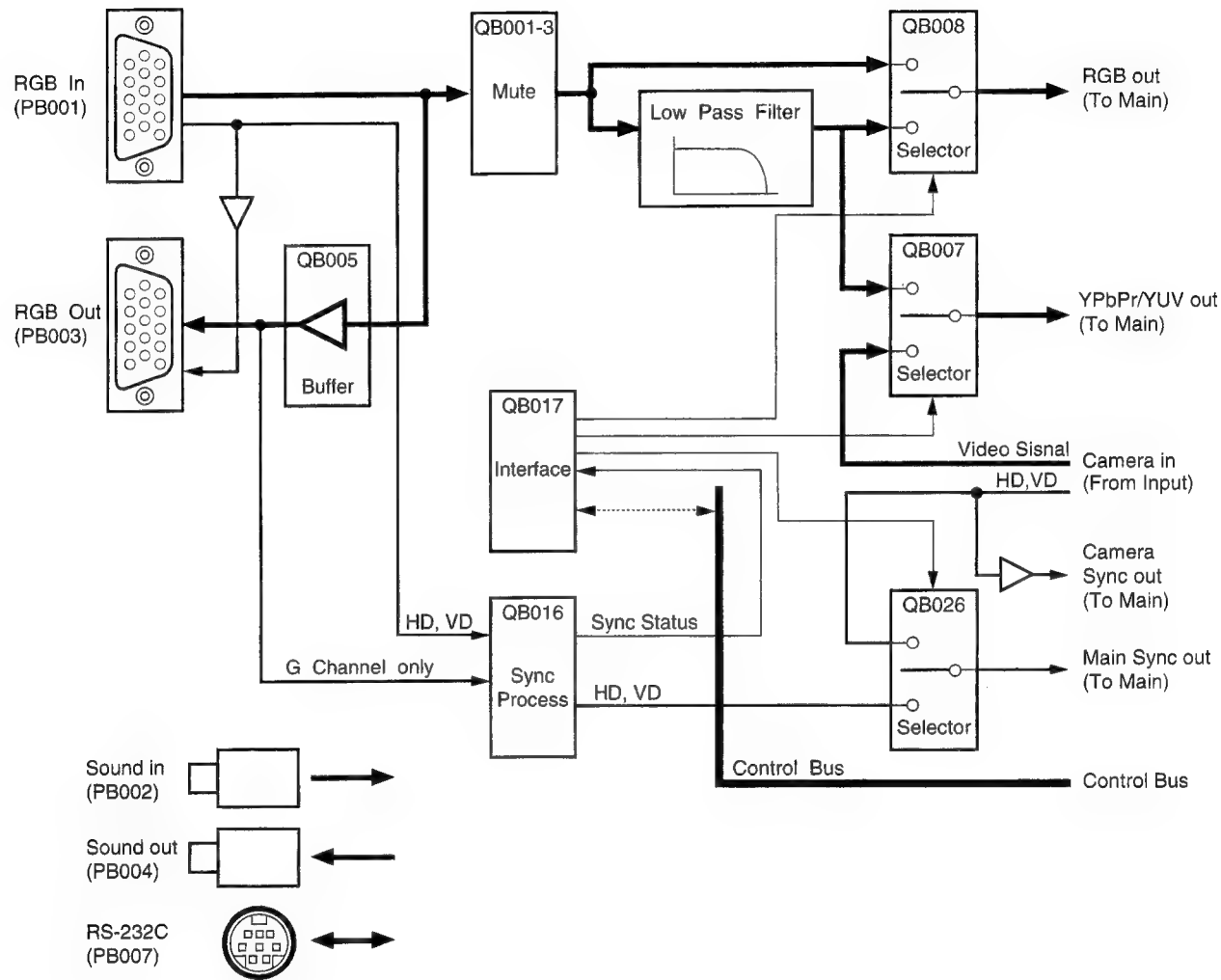


Fig. 2-3-1

3-2. Input Block Diagram

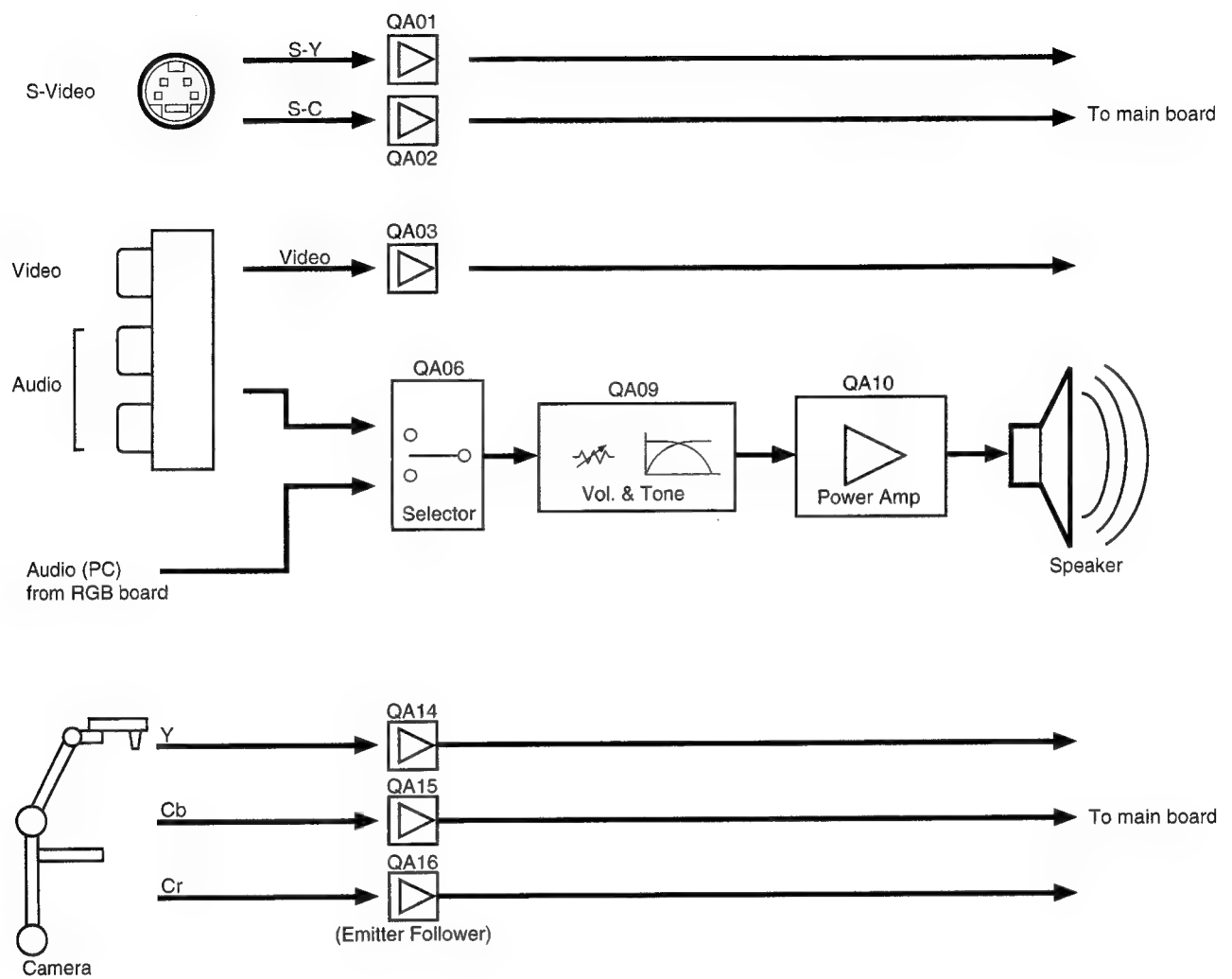
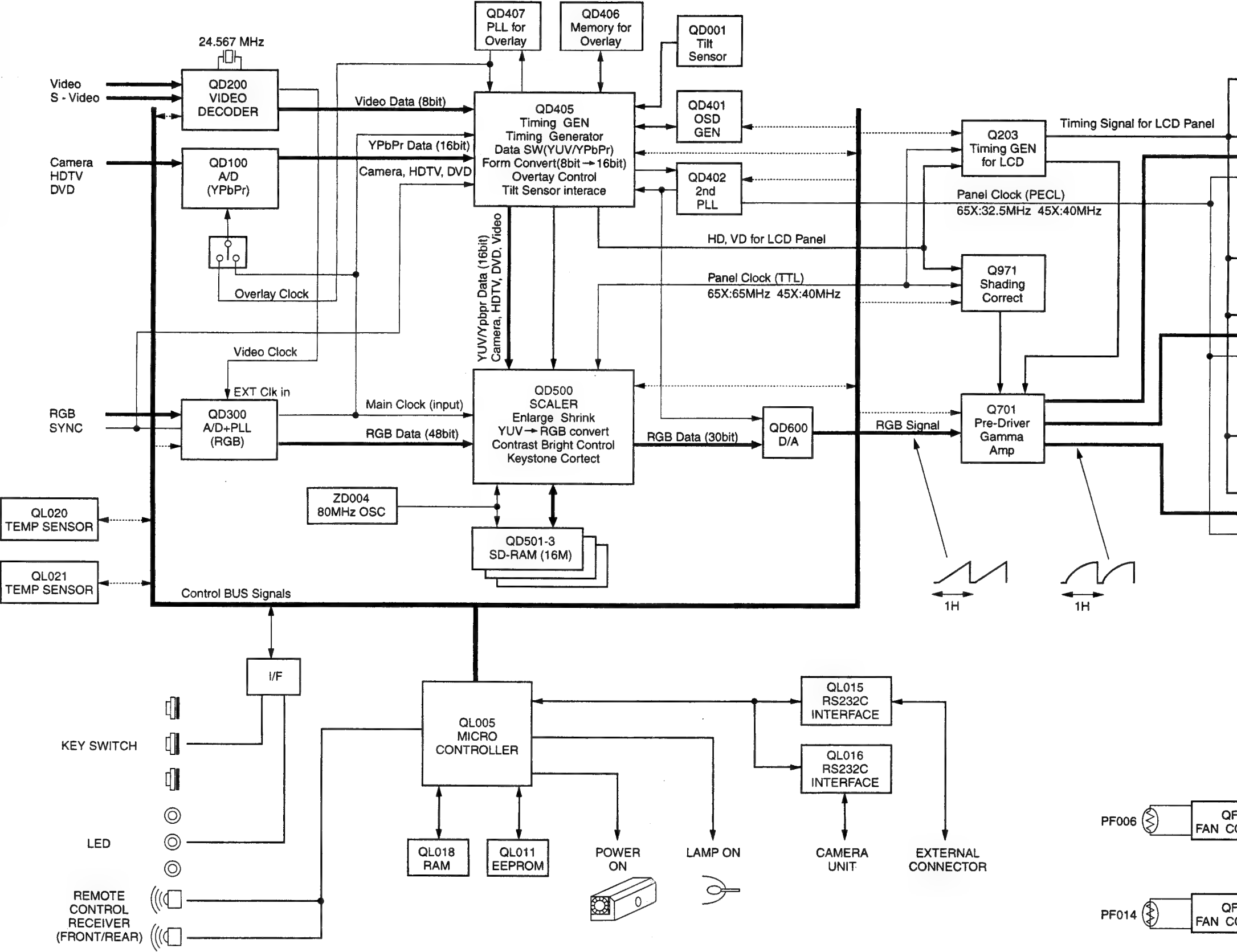


Fig. 2-3-2

3-3. Main Block Diagram



3-4. Digital Block Diagram

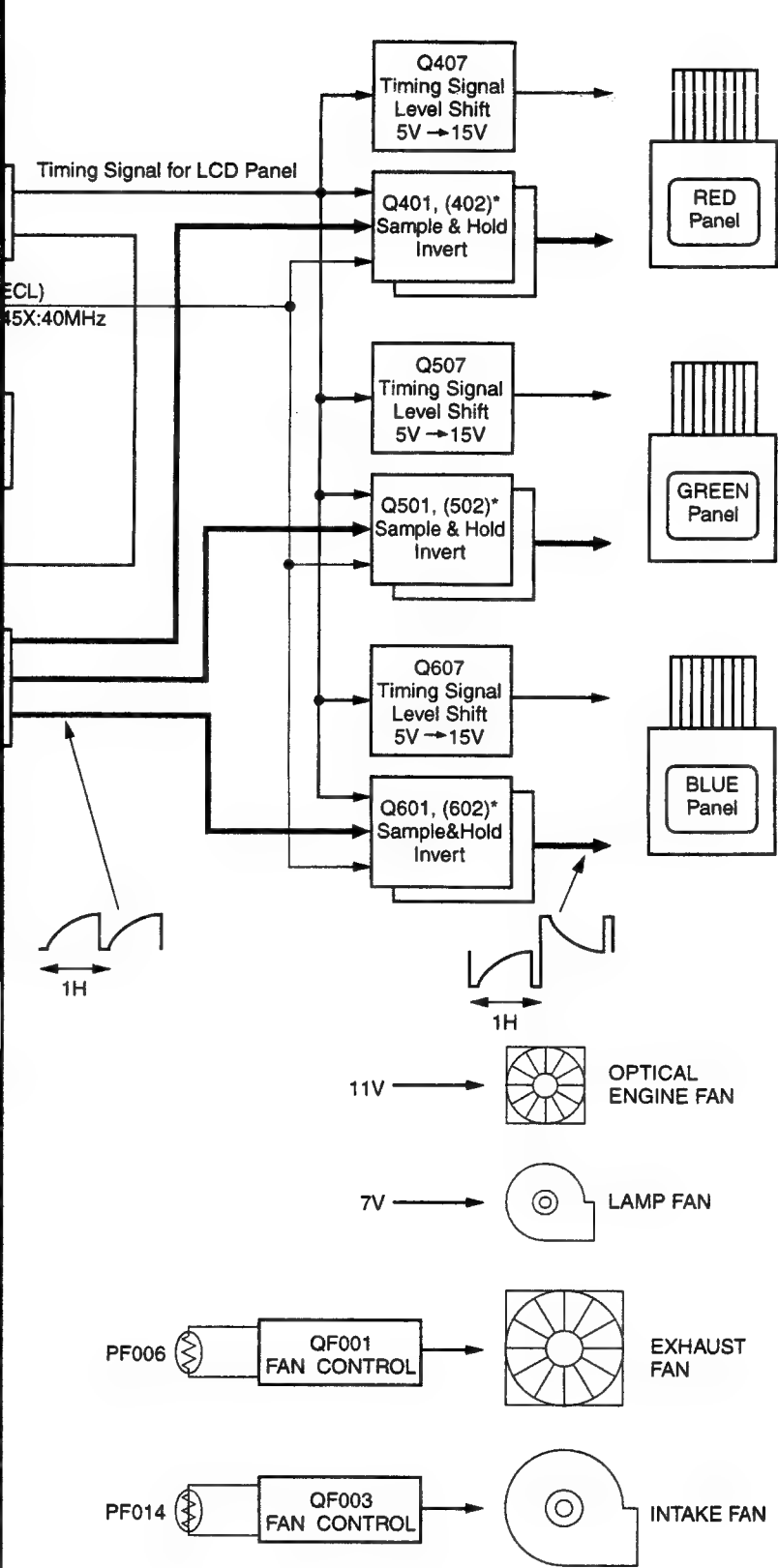


Fig. 2-3-3

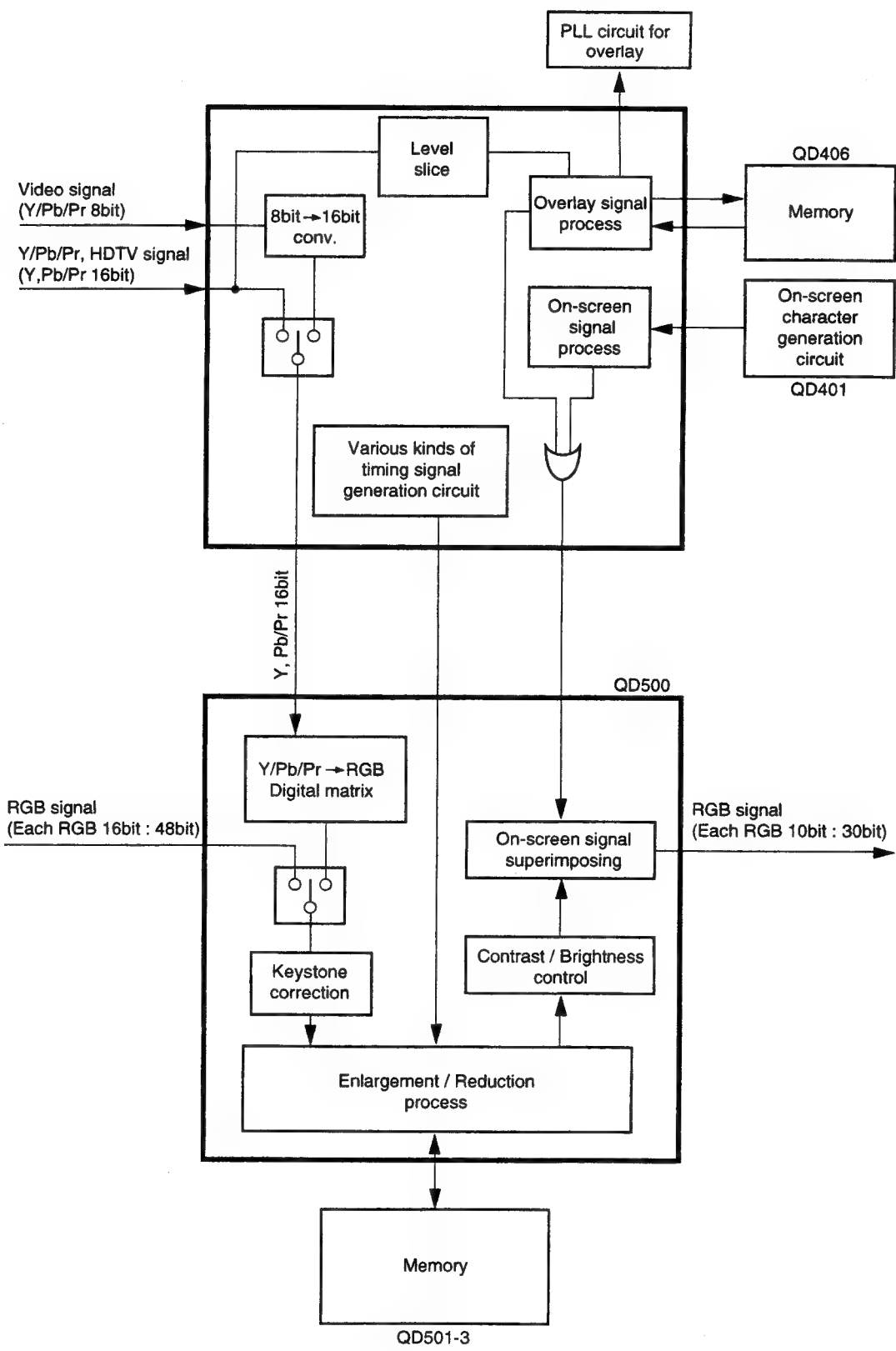
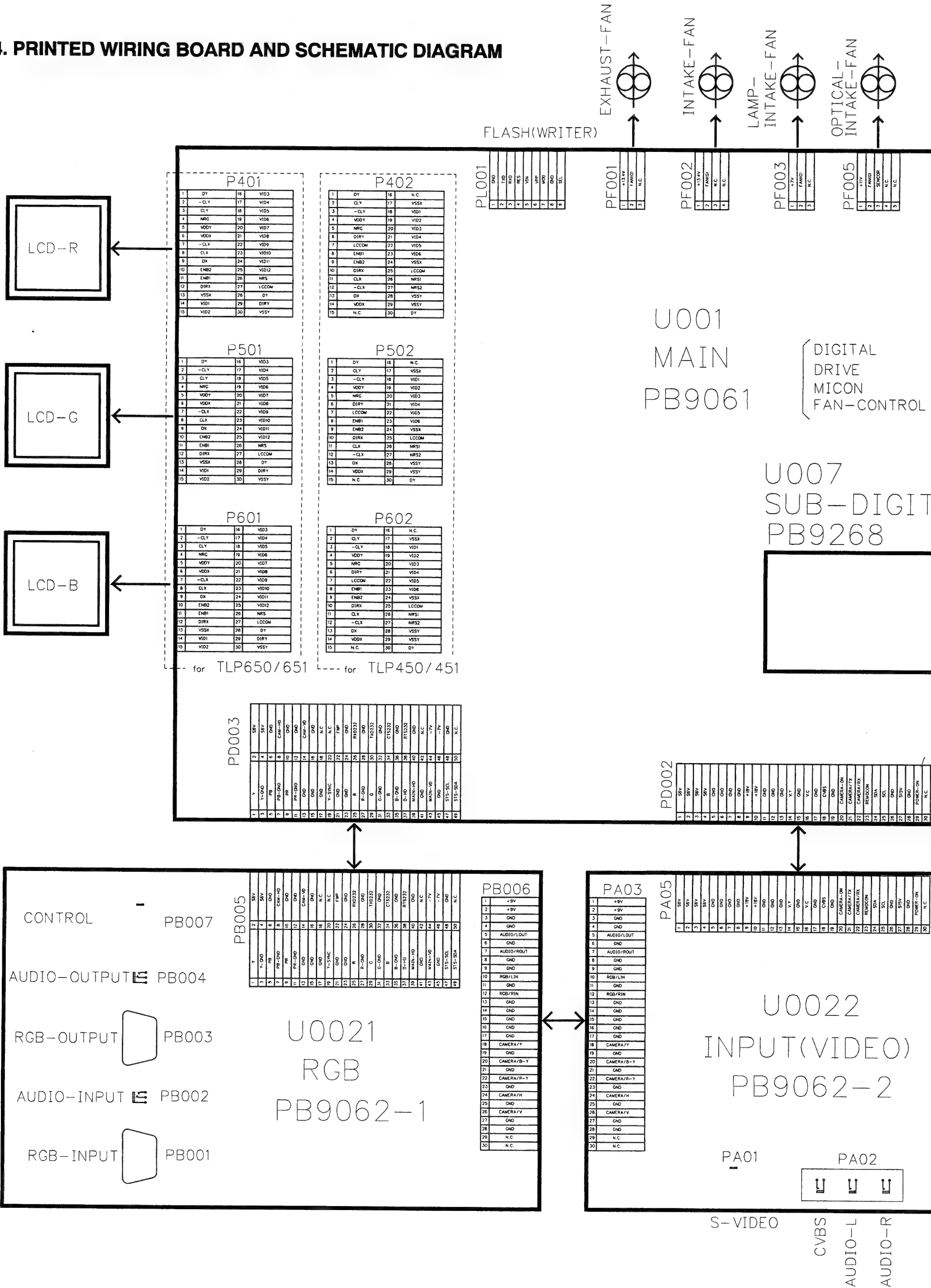


Fig. 2-3-4

4. PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM



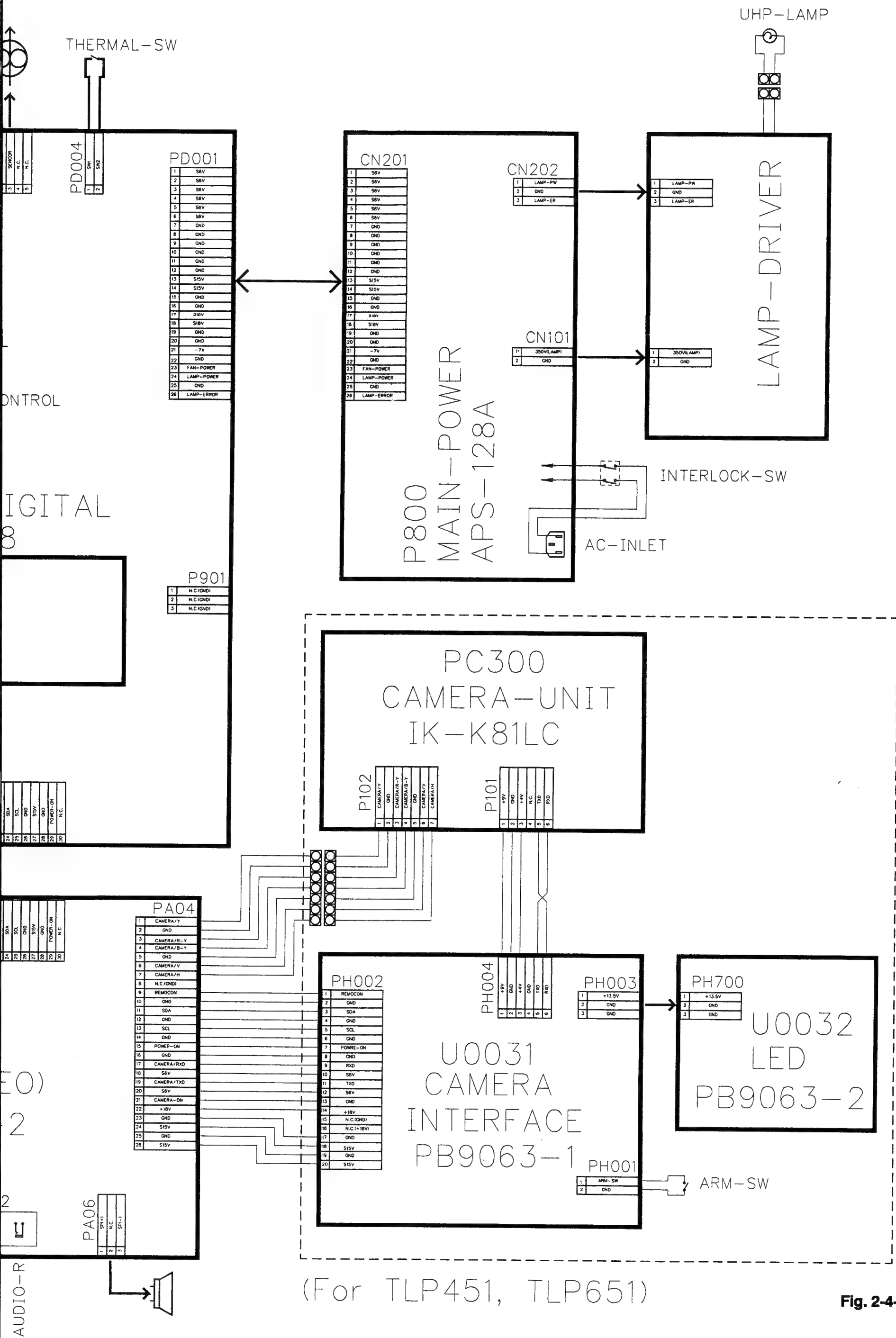


Fig. 2-4-1

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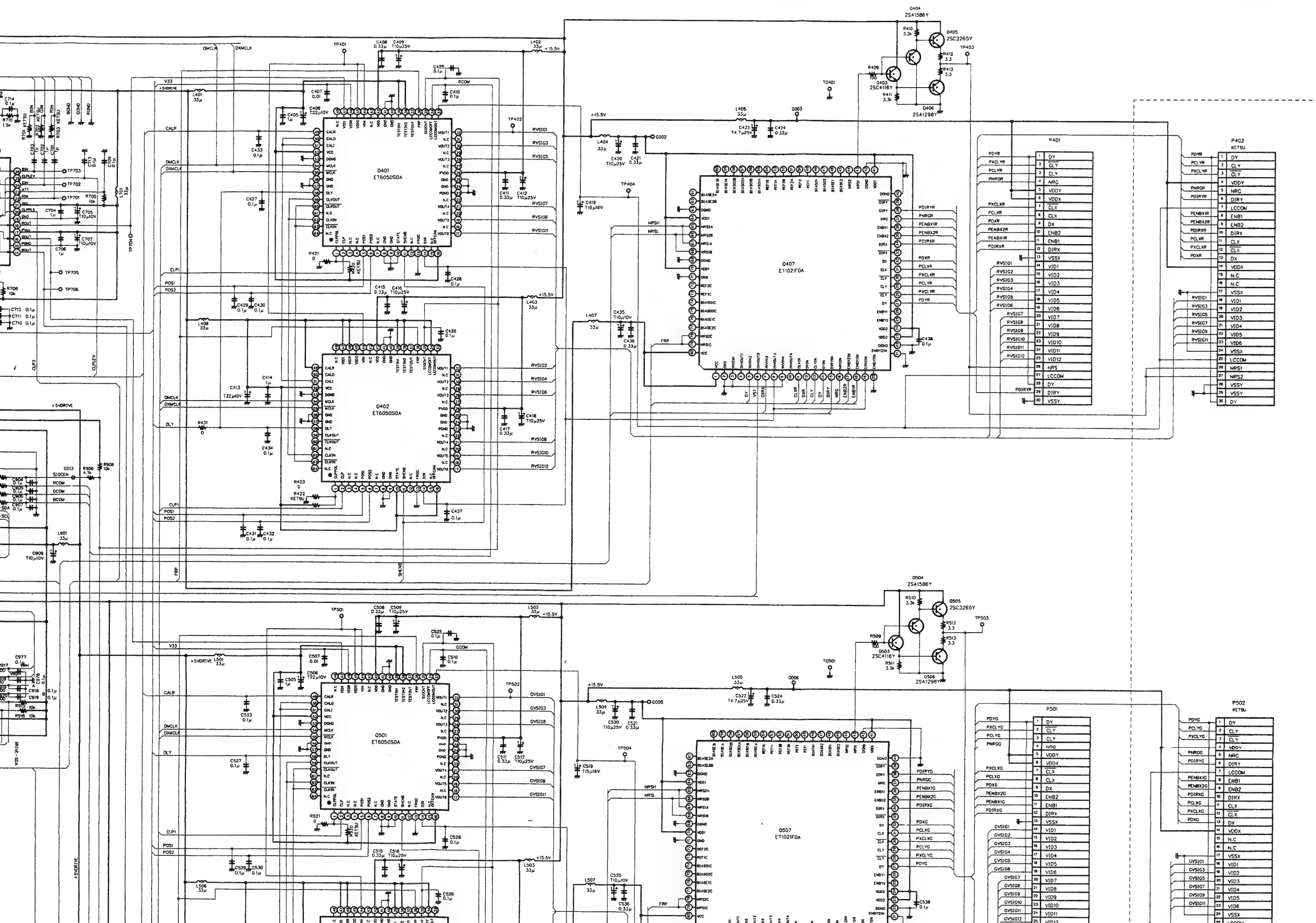
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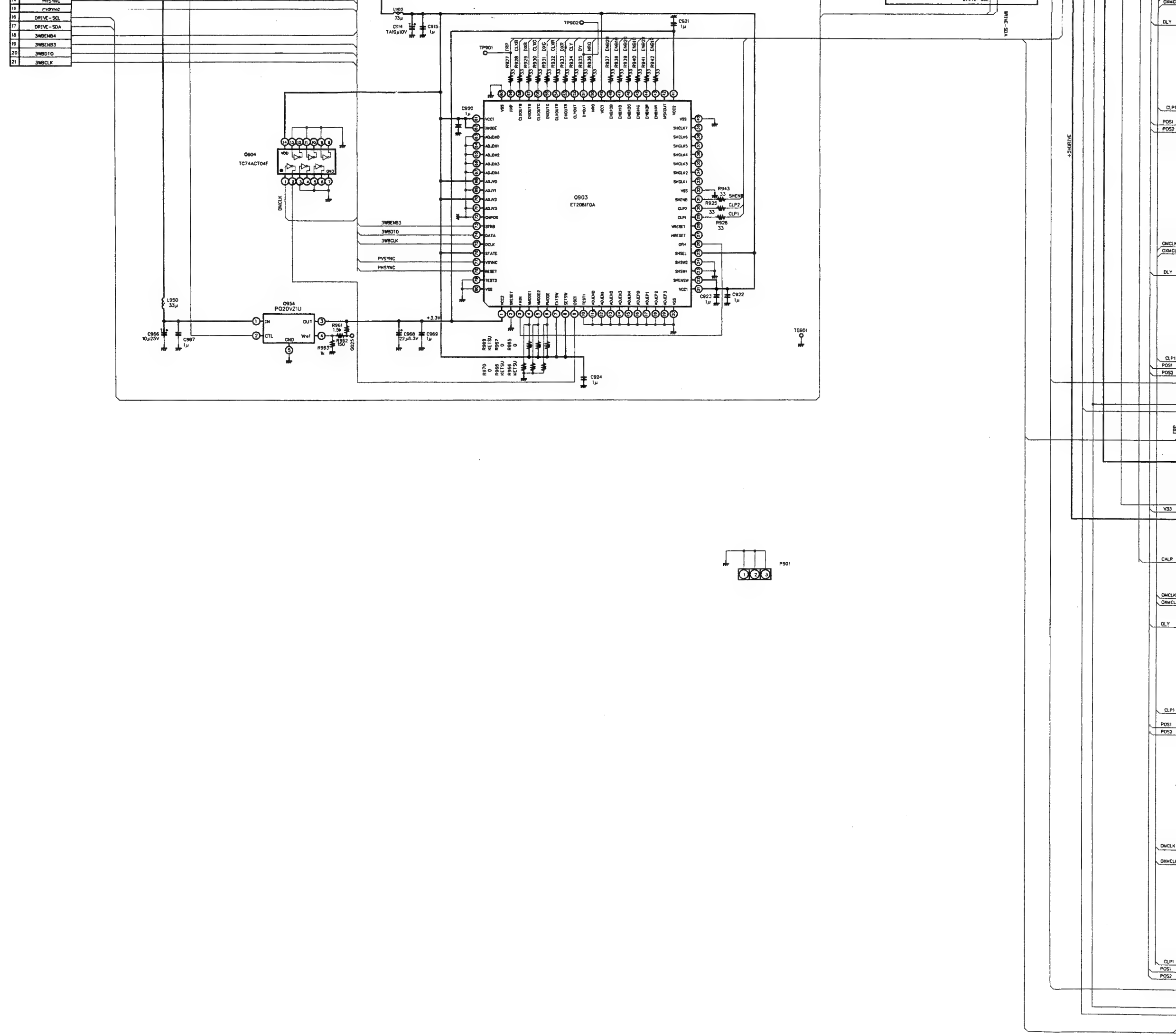
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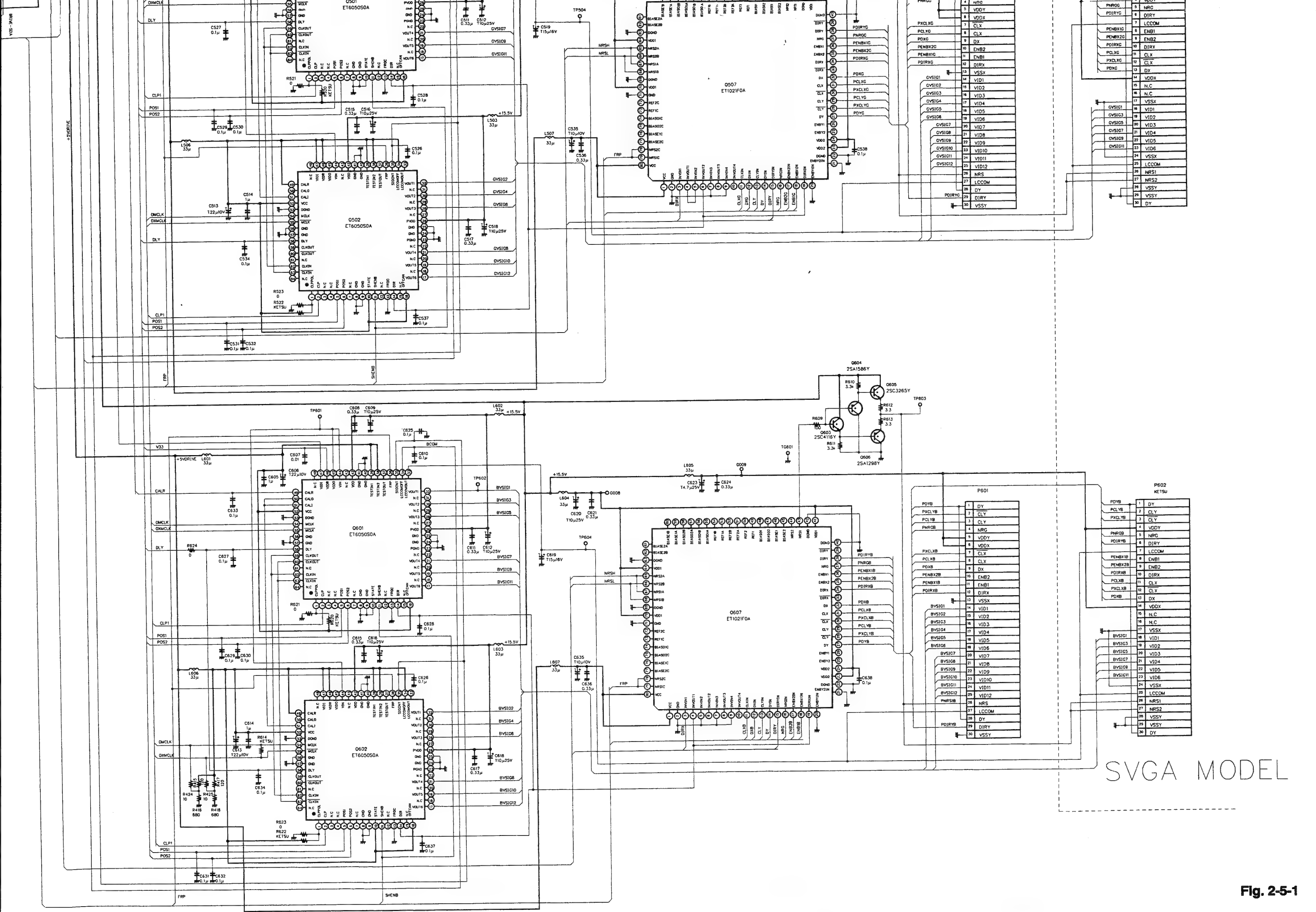


Fig. 2-5-1

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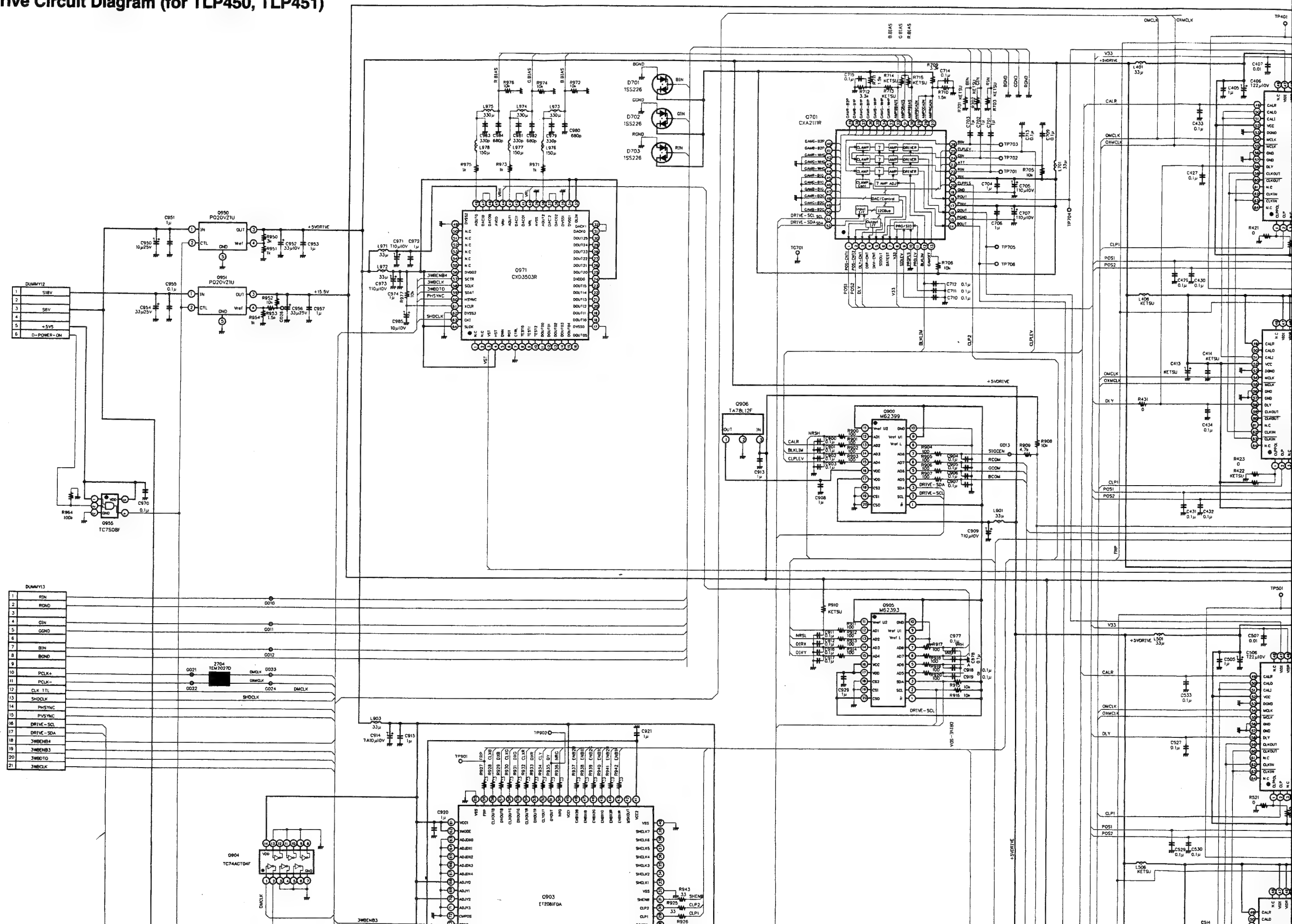
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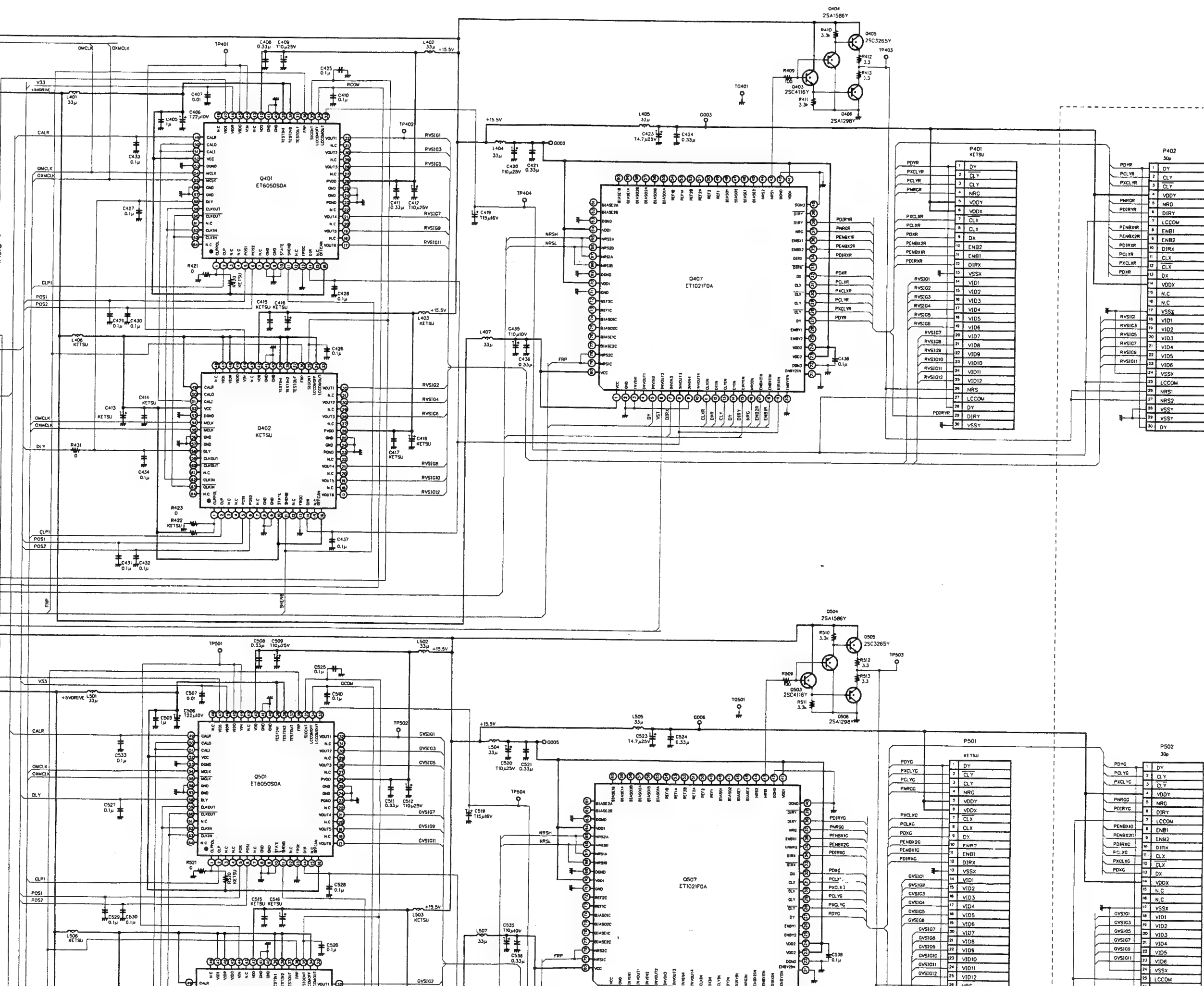
F

G

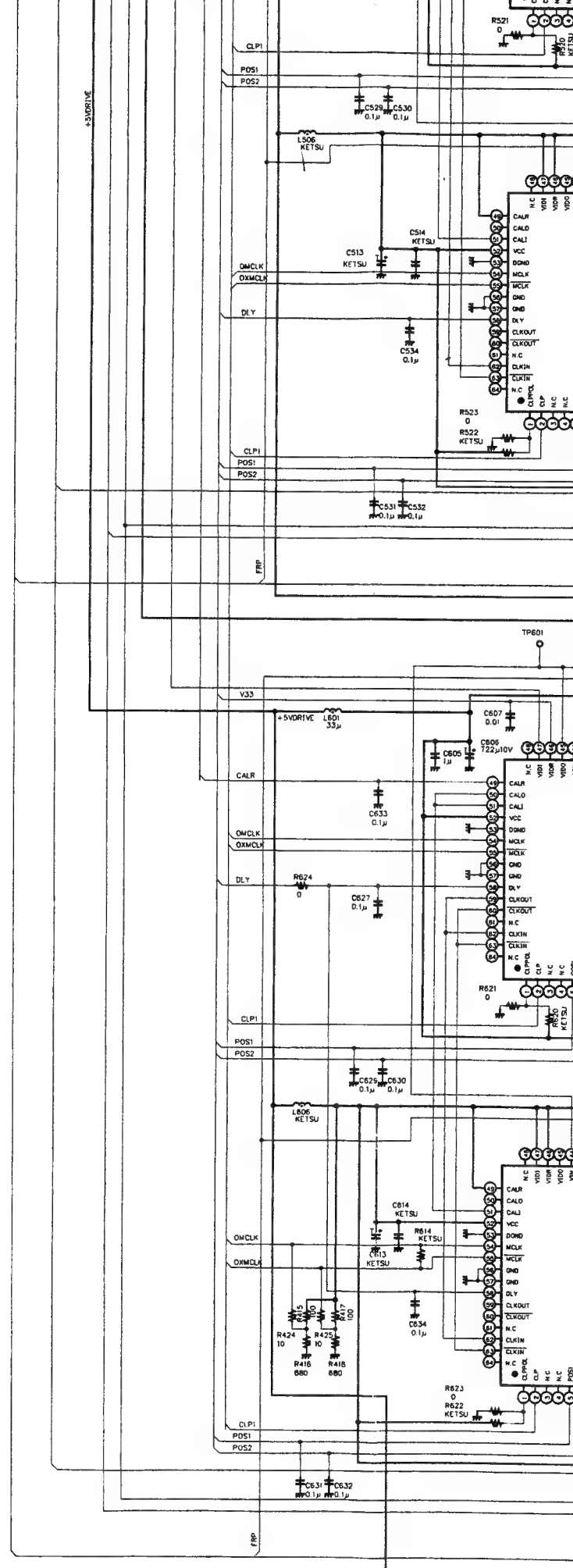
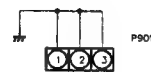
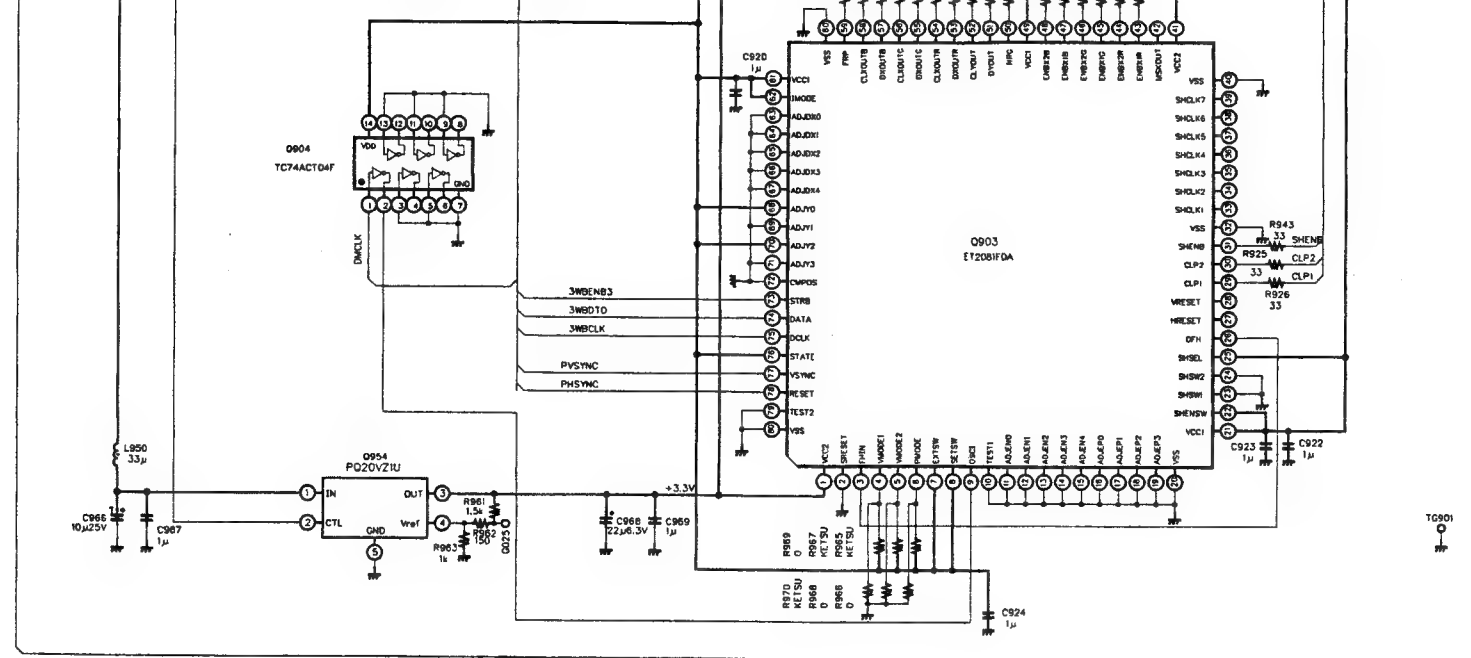
H

5-2. Drive Circuit Diagram (for TLP450, TLP451)





2-19



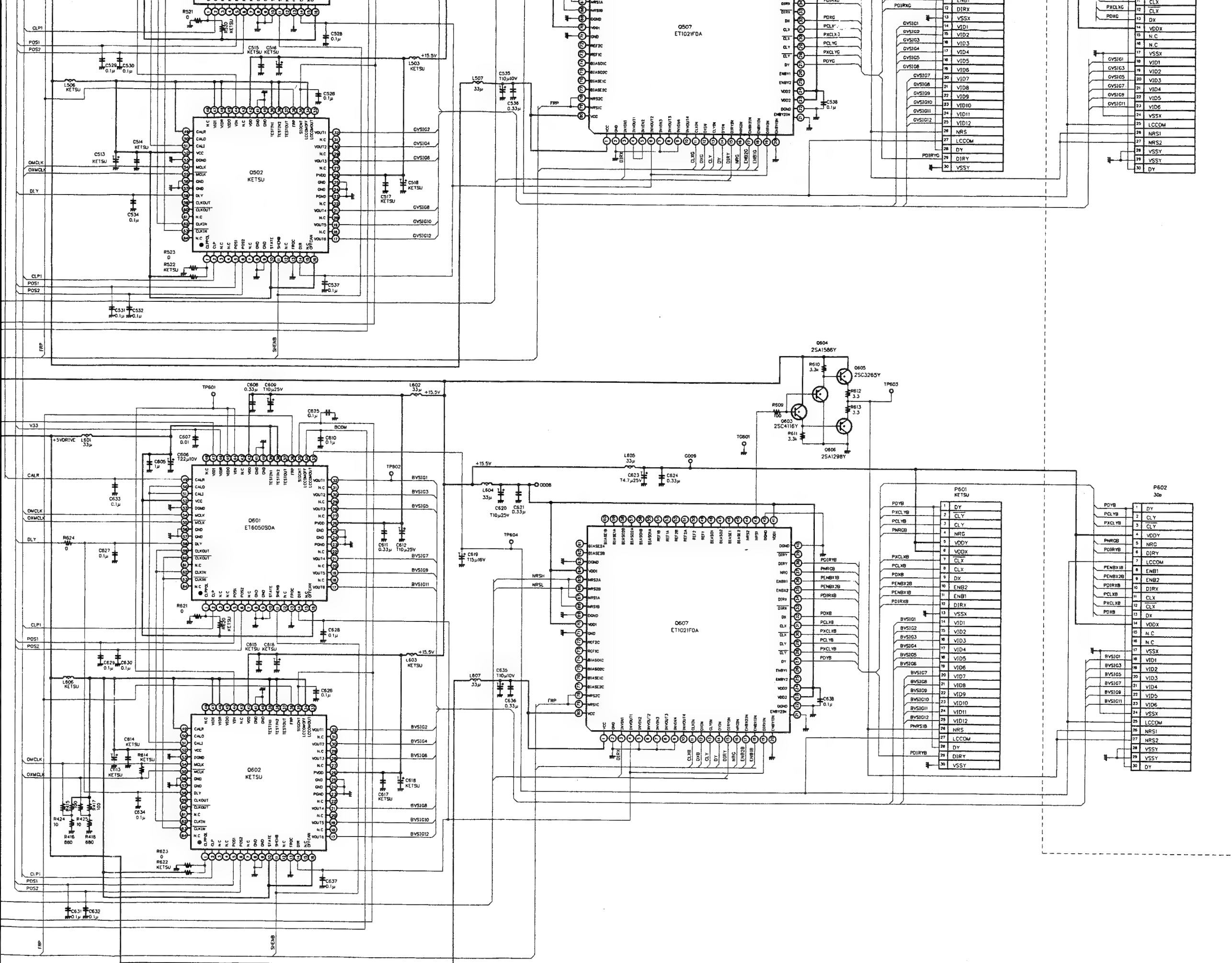
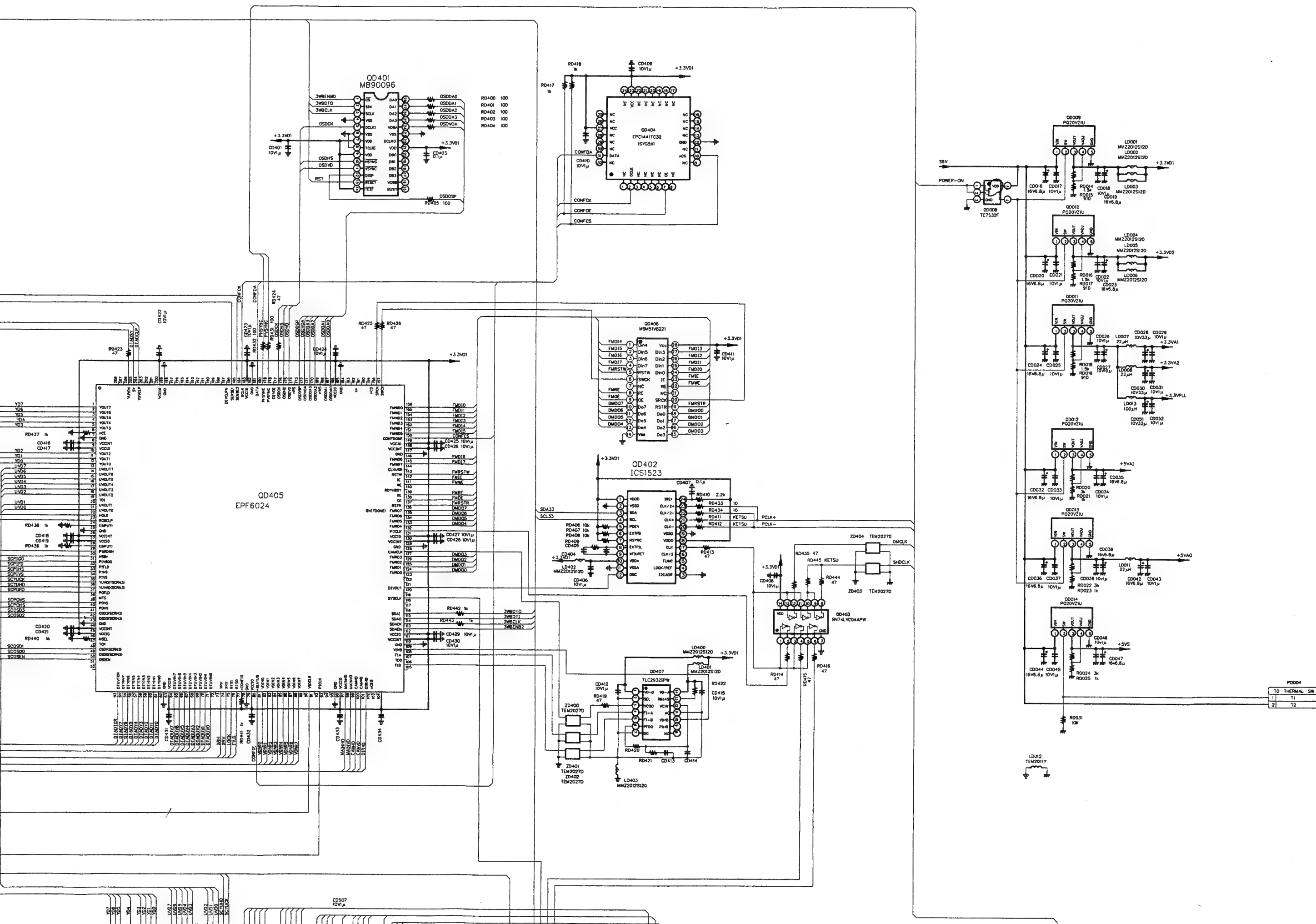


Fig. 2-5



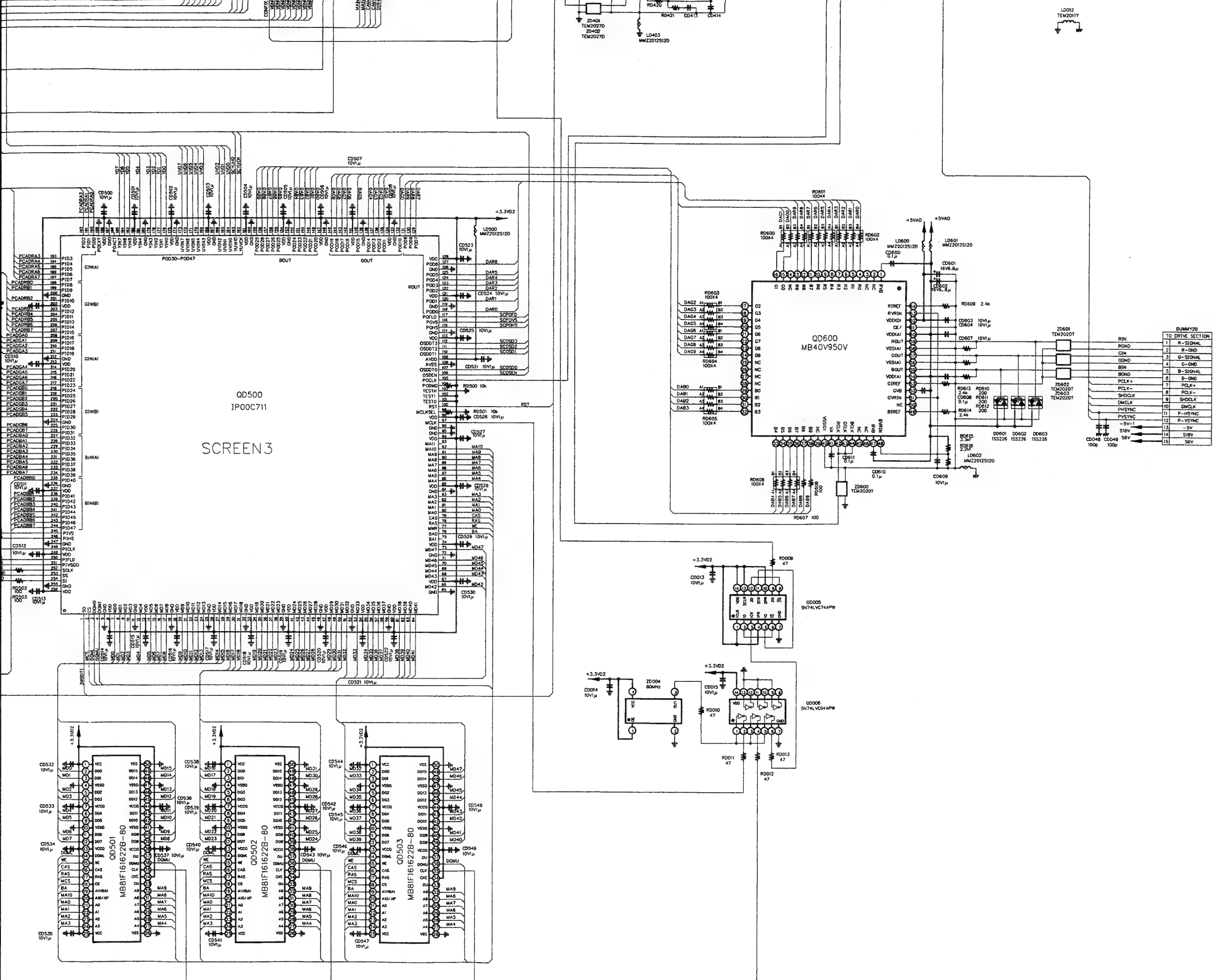


Fig. 2-5-3

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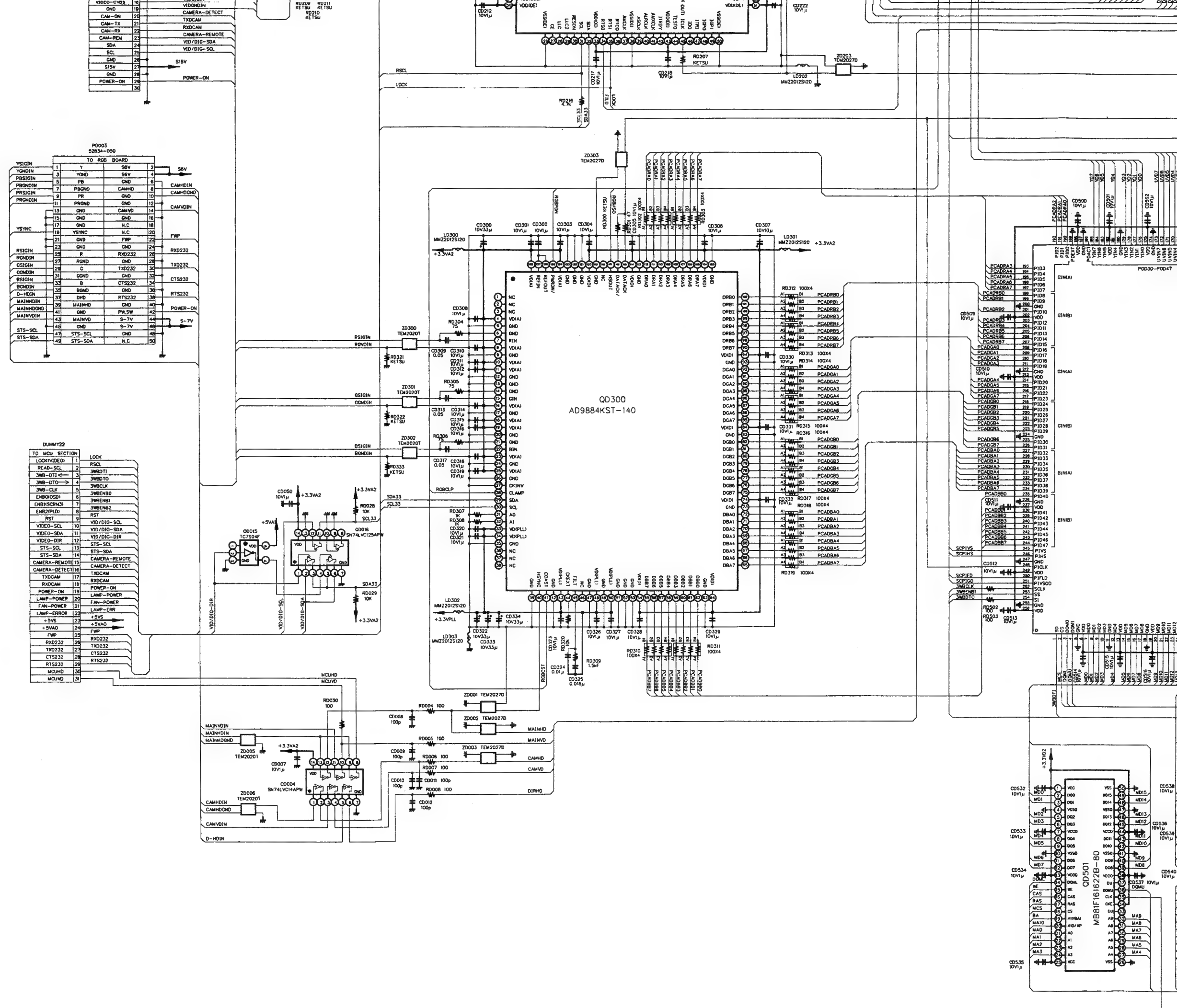
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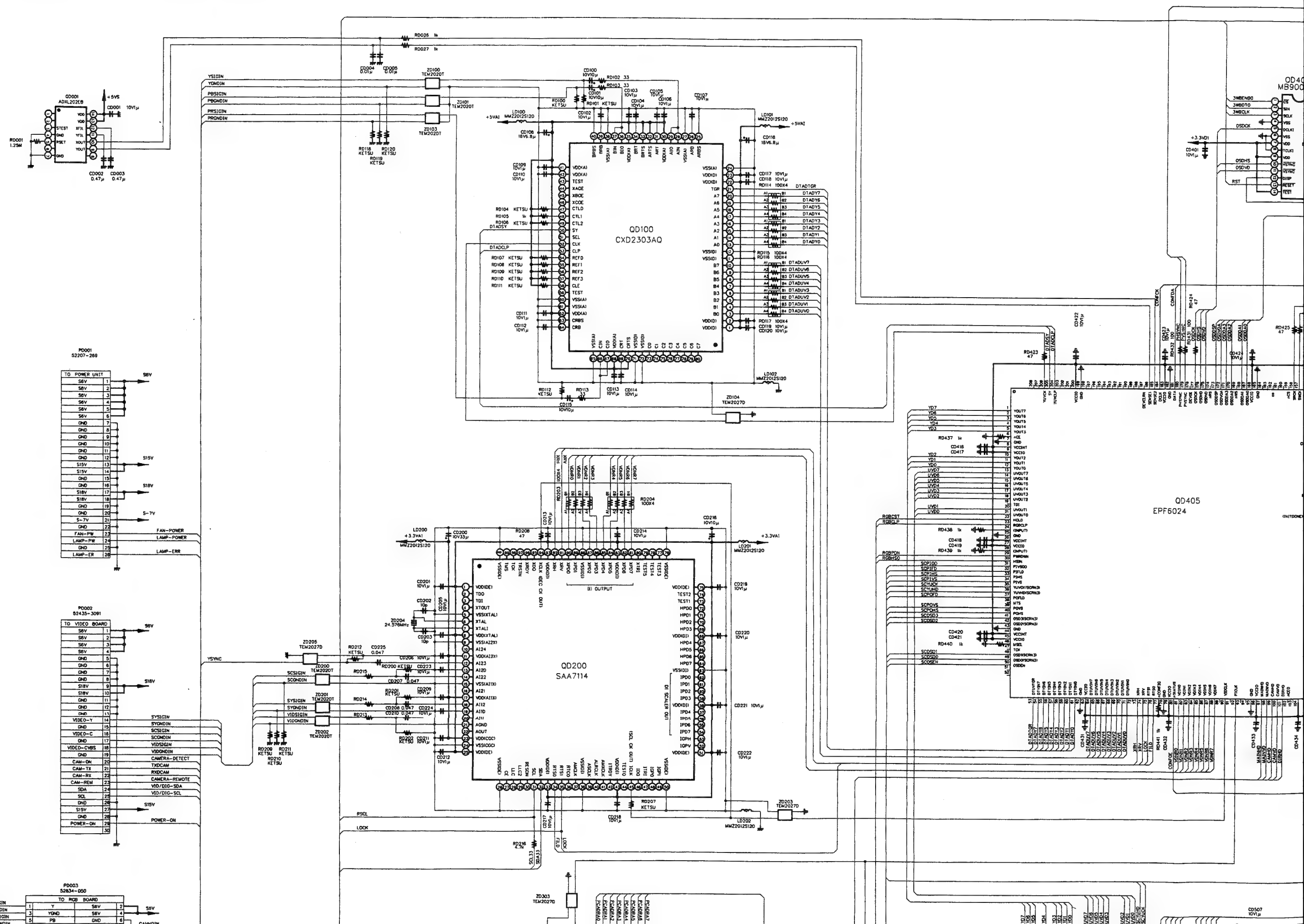
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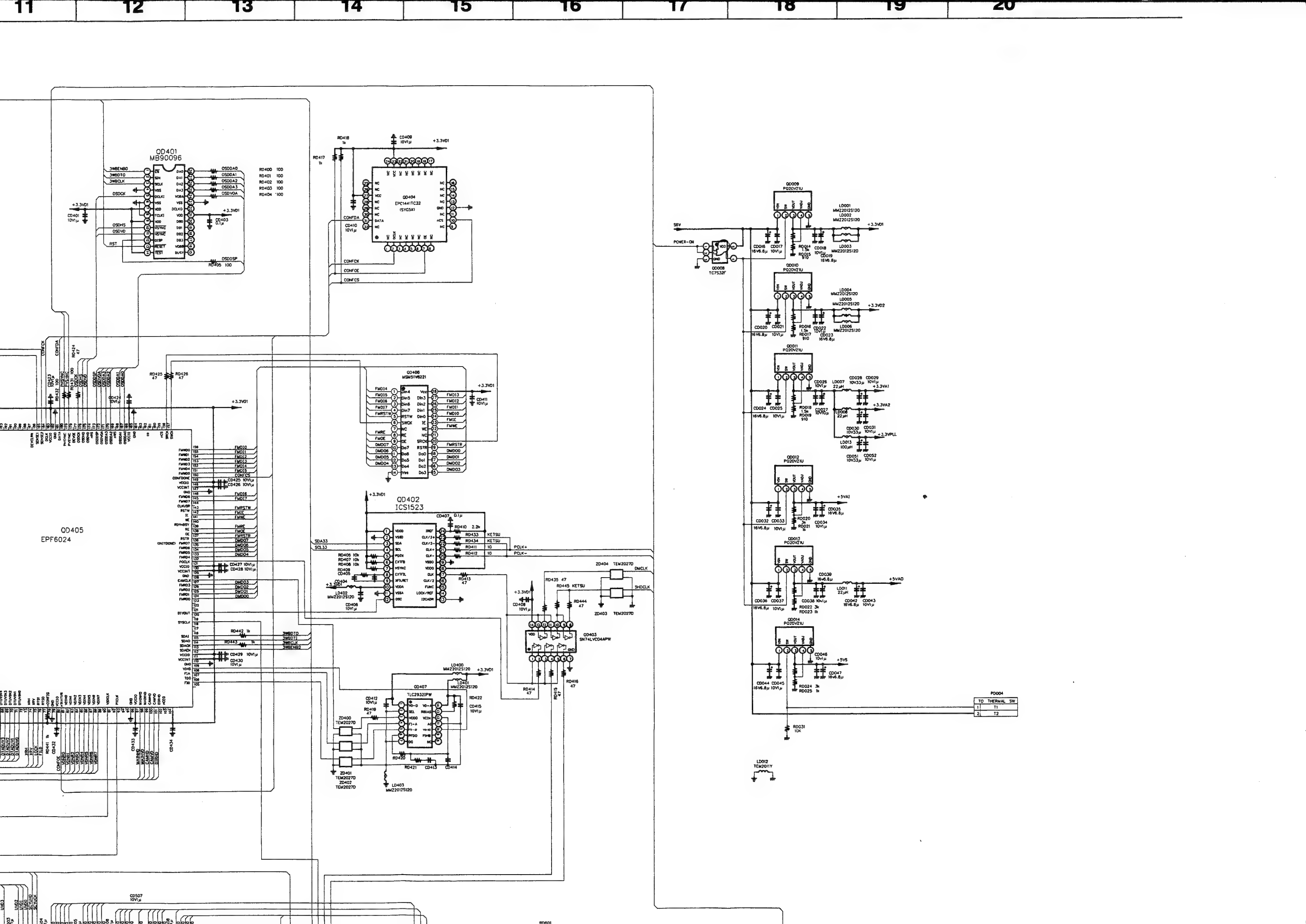
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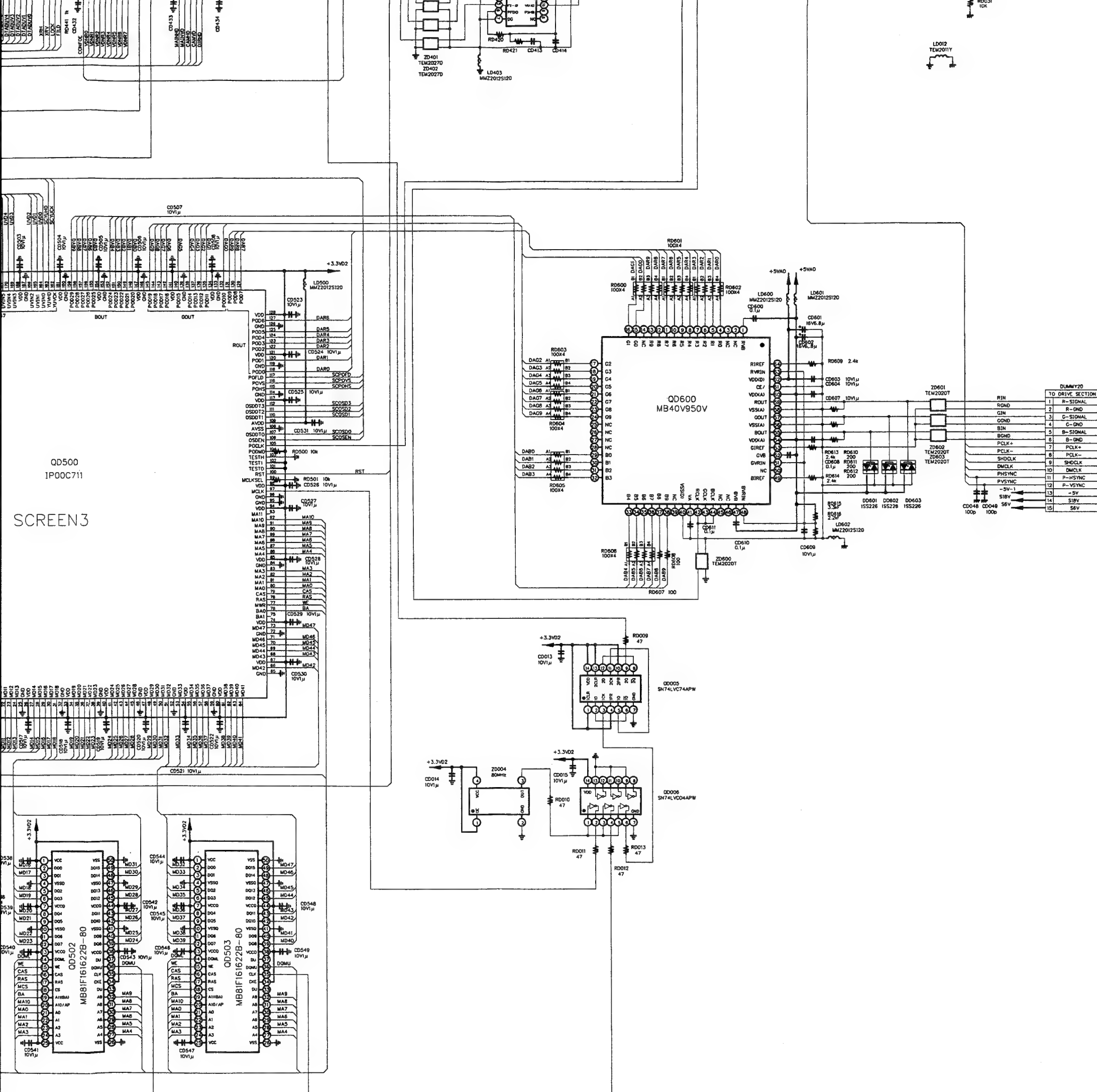


Fig. 2-5-4



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5-5. Micon Circuit Diagram

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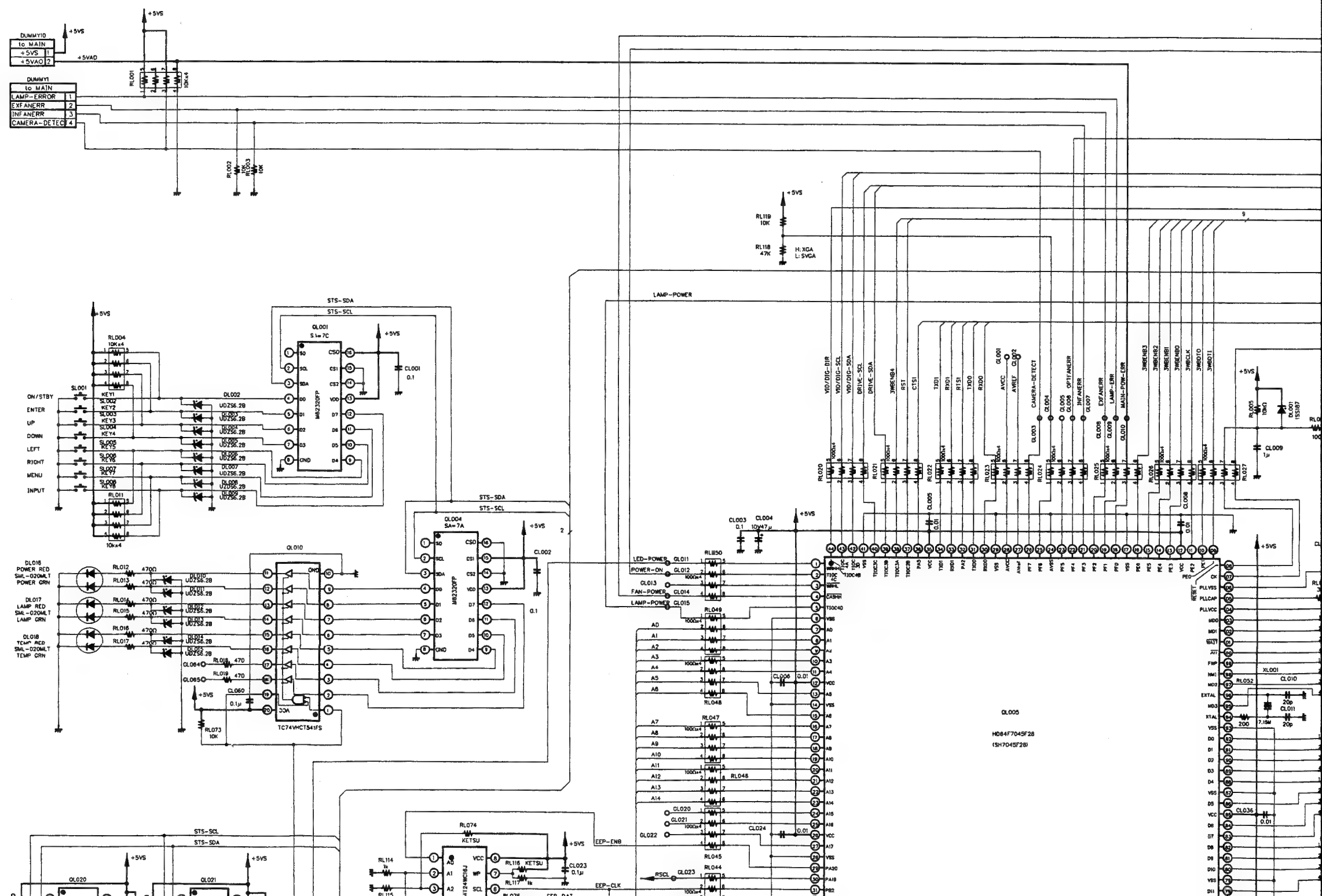
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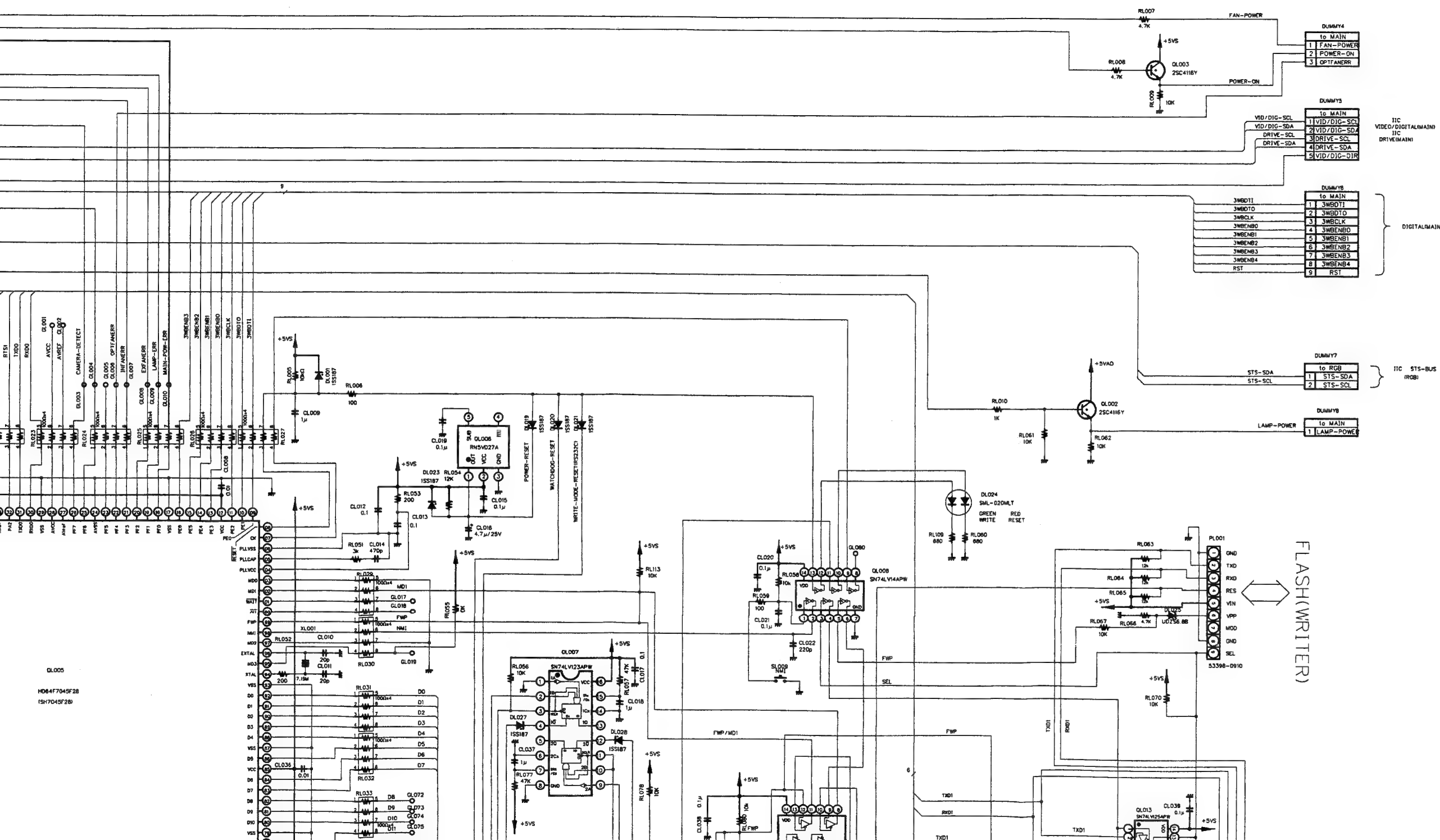
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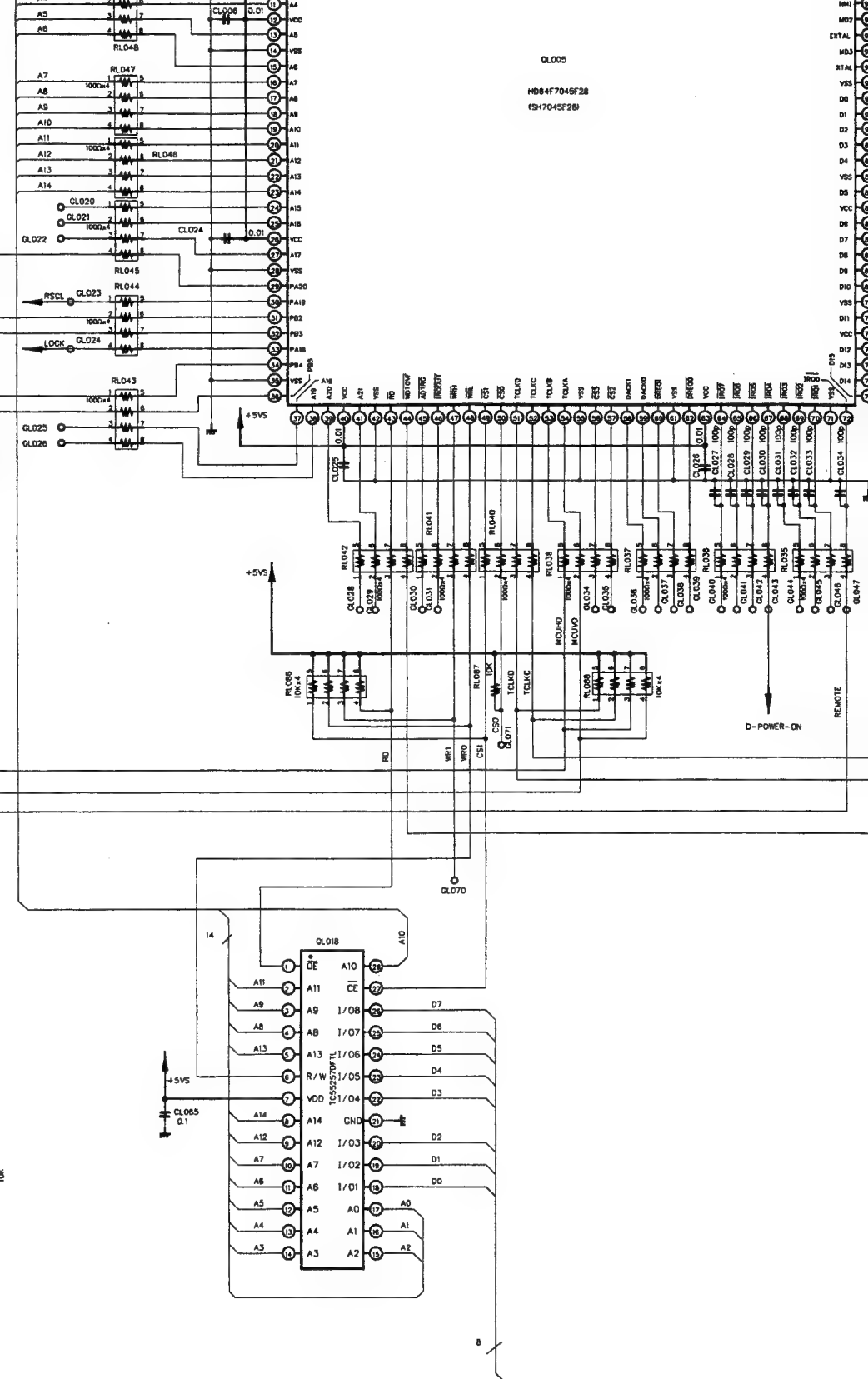
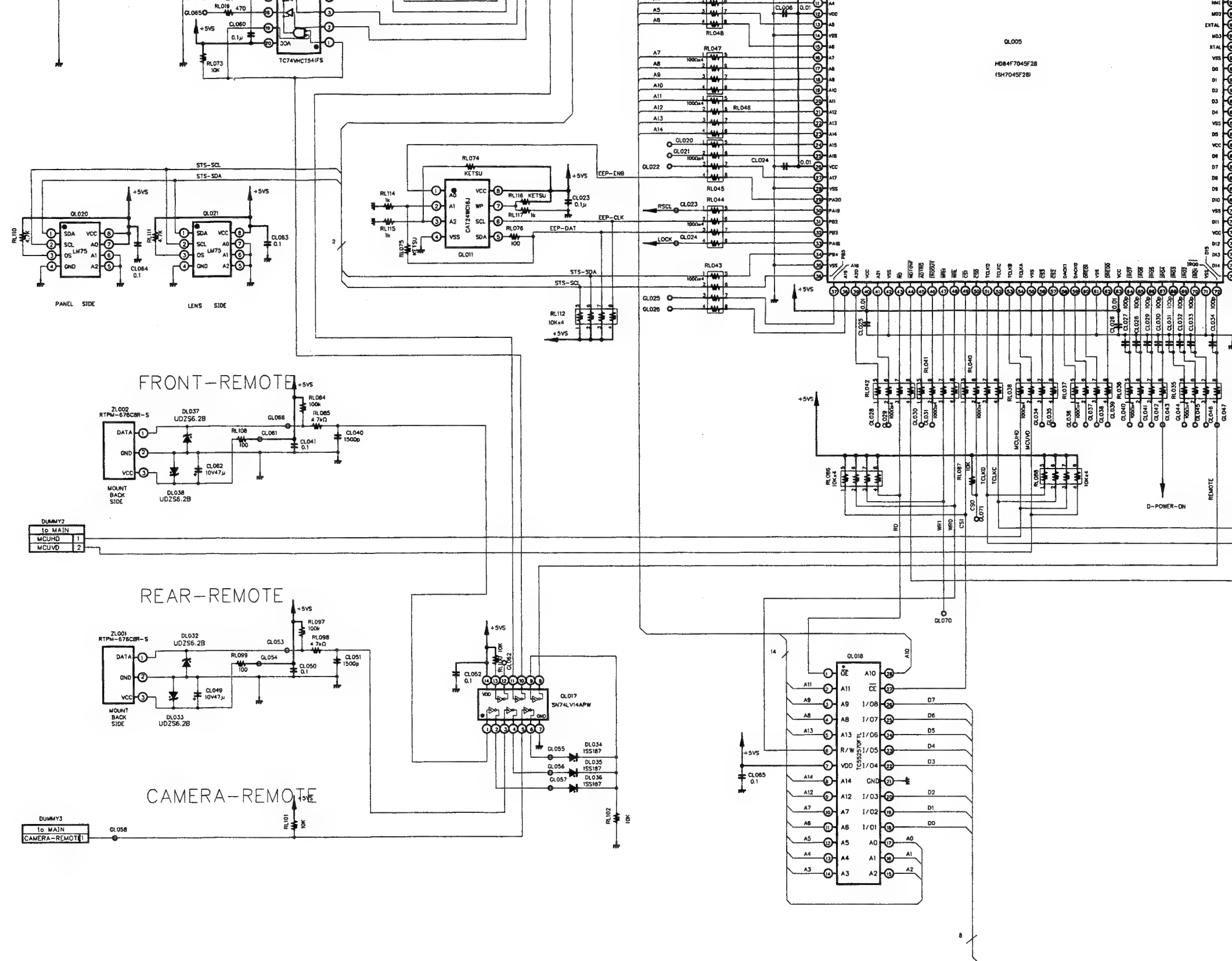
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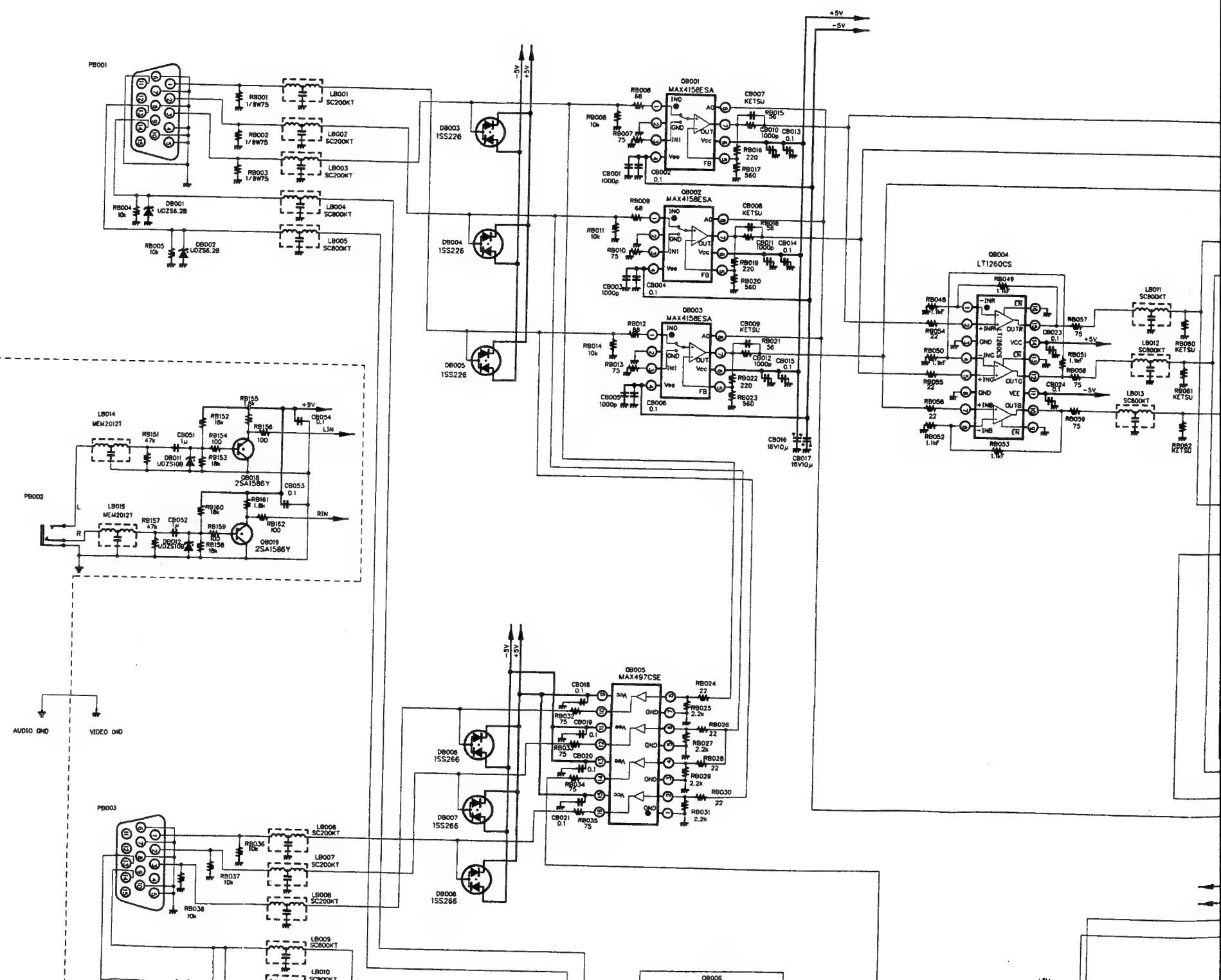
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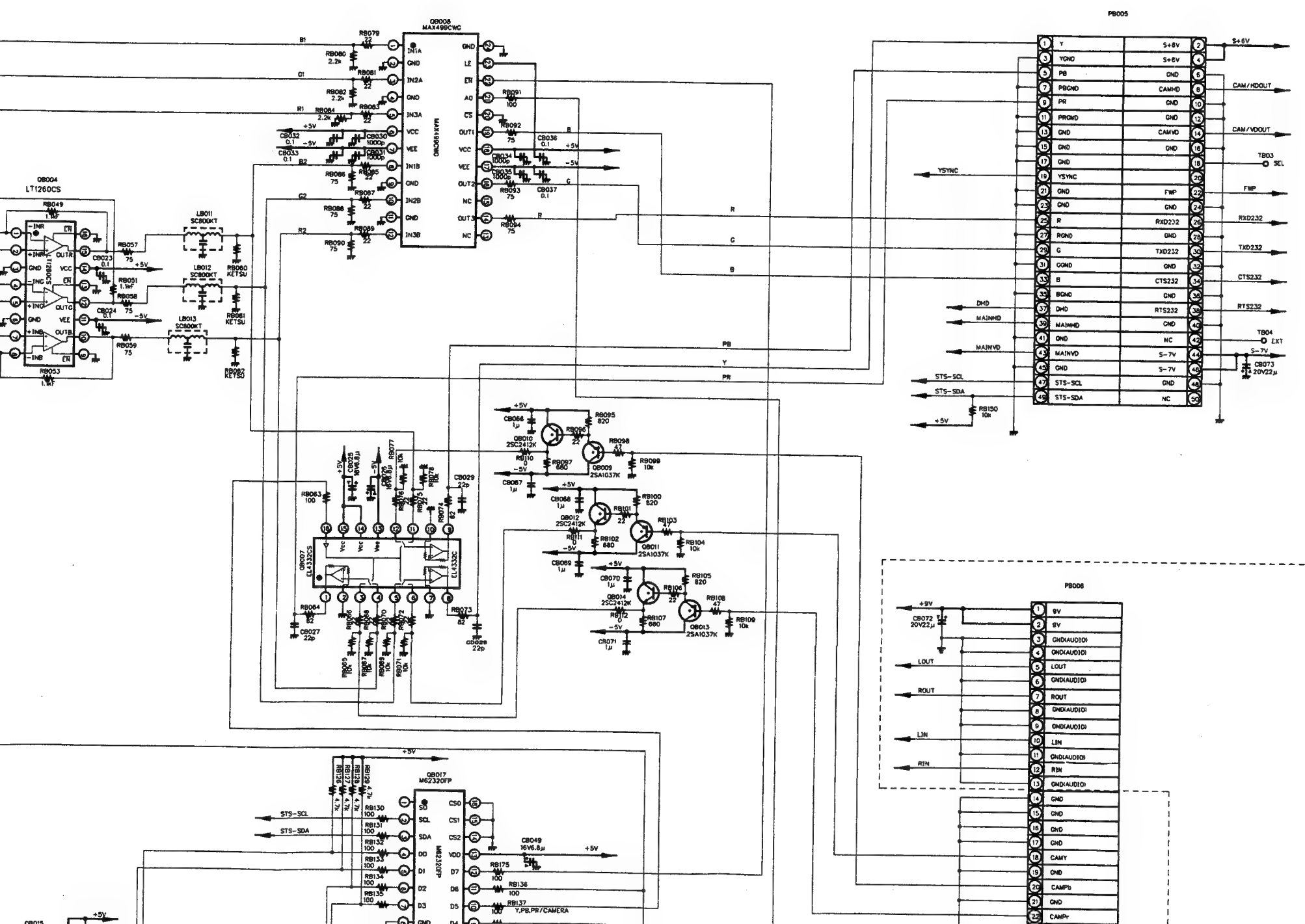
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5-6. RGB Circuit Diagram







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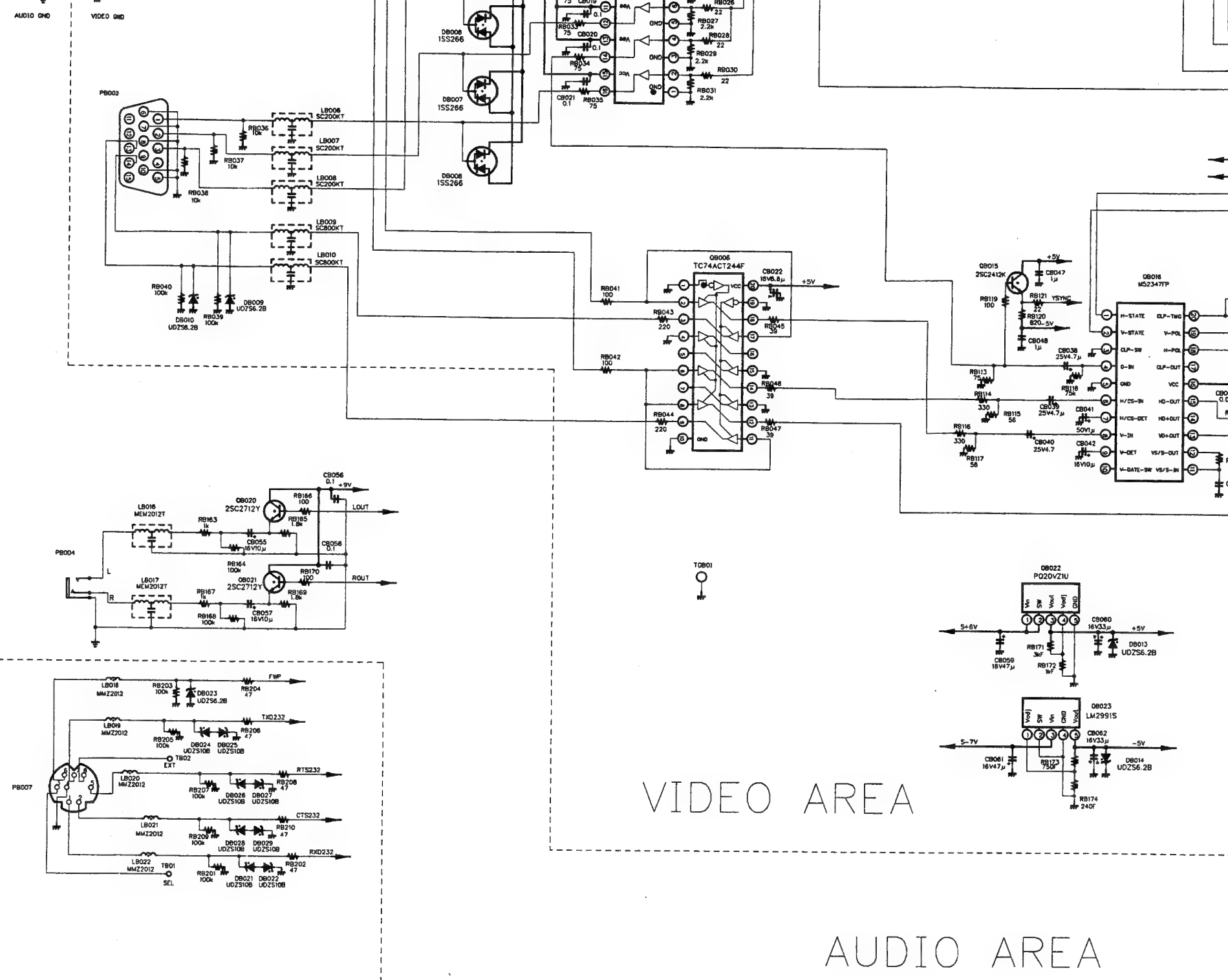
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PC			MTCOM	
NO	DSUB-9P	↔	PB007	NO
1	CD	↔	FWP	6
2	RXD	↔	TXD232	7
3	TXD	↔	RXD232	1
4	DTR	↔	ISEL	3
5	GND	↔	GND	4
6	DSR	↔	-	X
7	RTS	↔	CTS232	2
8	CTS	↔	RTS232	5
9	CI	↔	(EXT)	8



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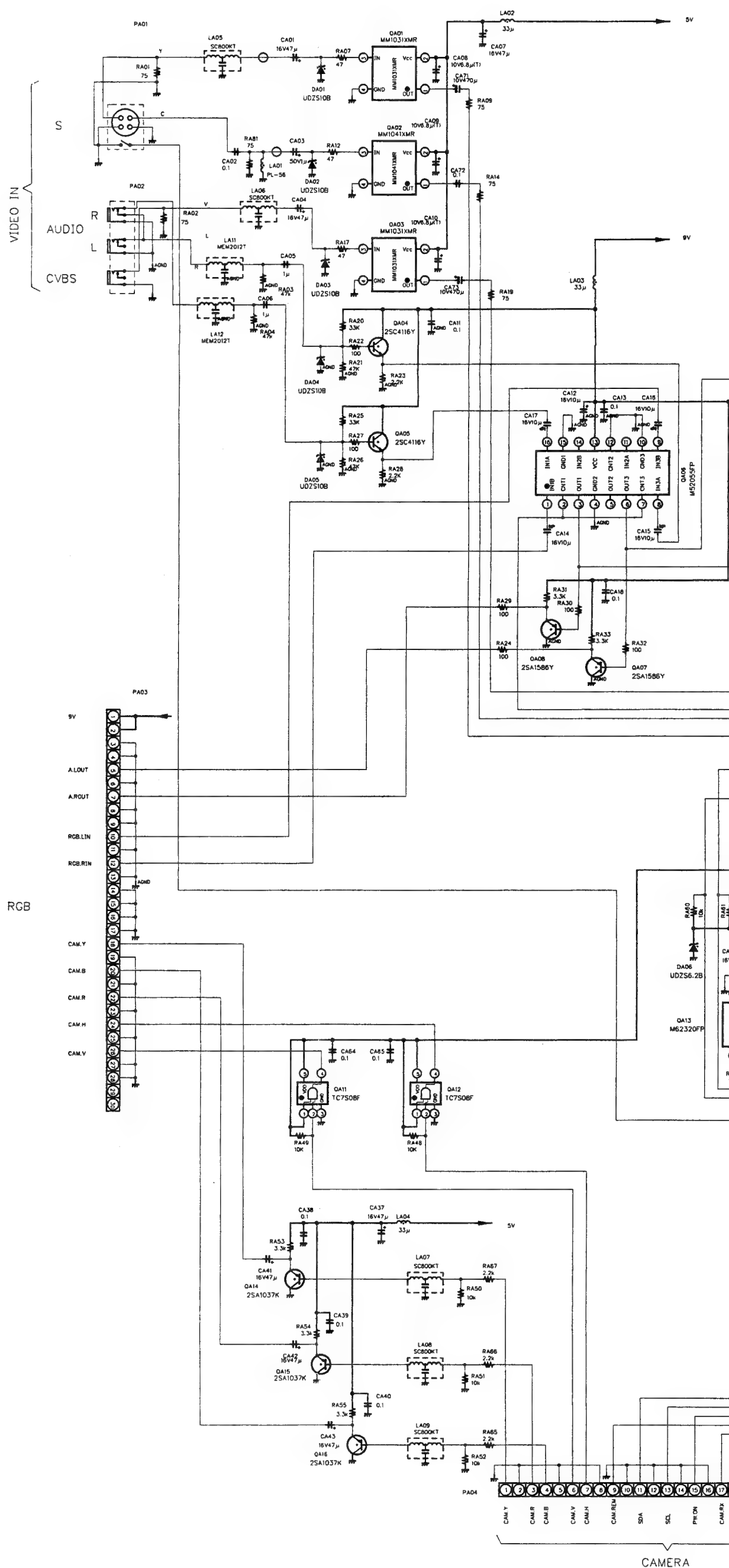
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5-7. Input Circuit Diagram



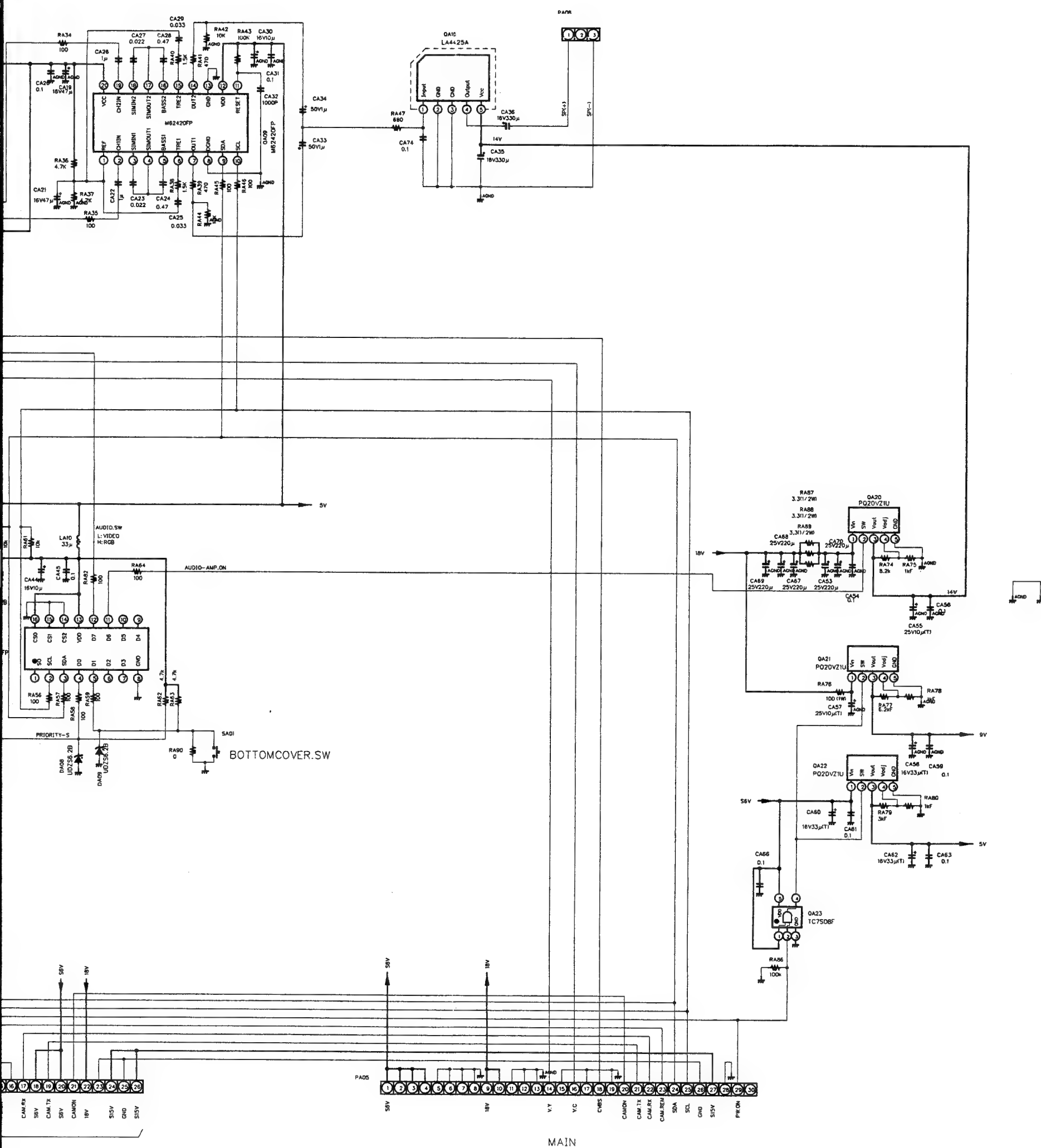


Fig. 2-5-7



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5-9. Camera Interface Circuit Diagram

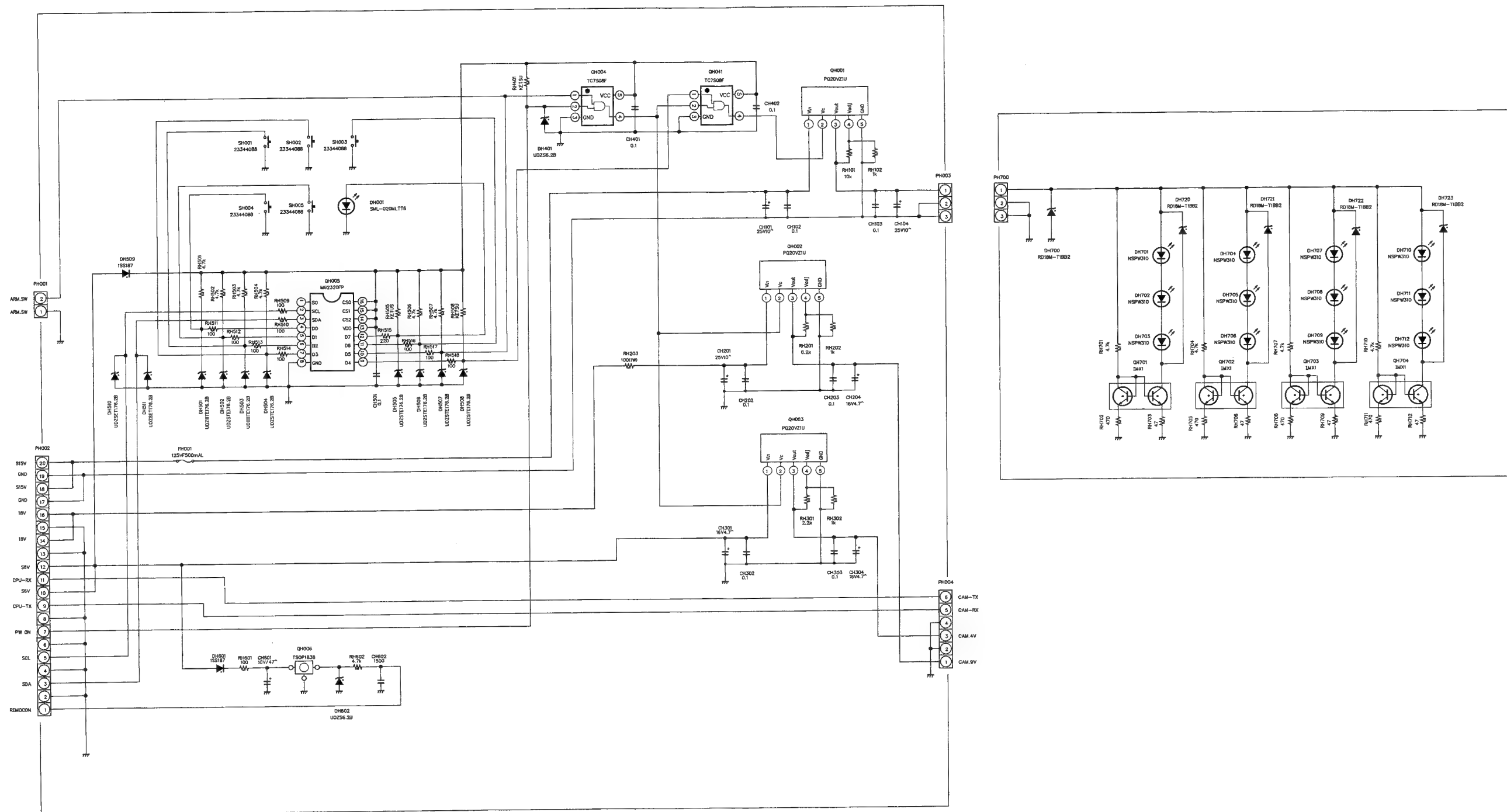


Fig. 2-5-9

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5-10. FAN Control Circuit Diagram

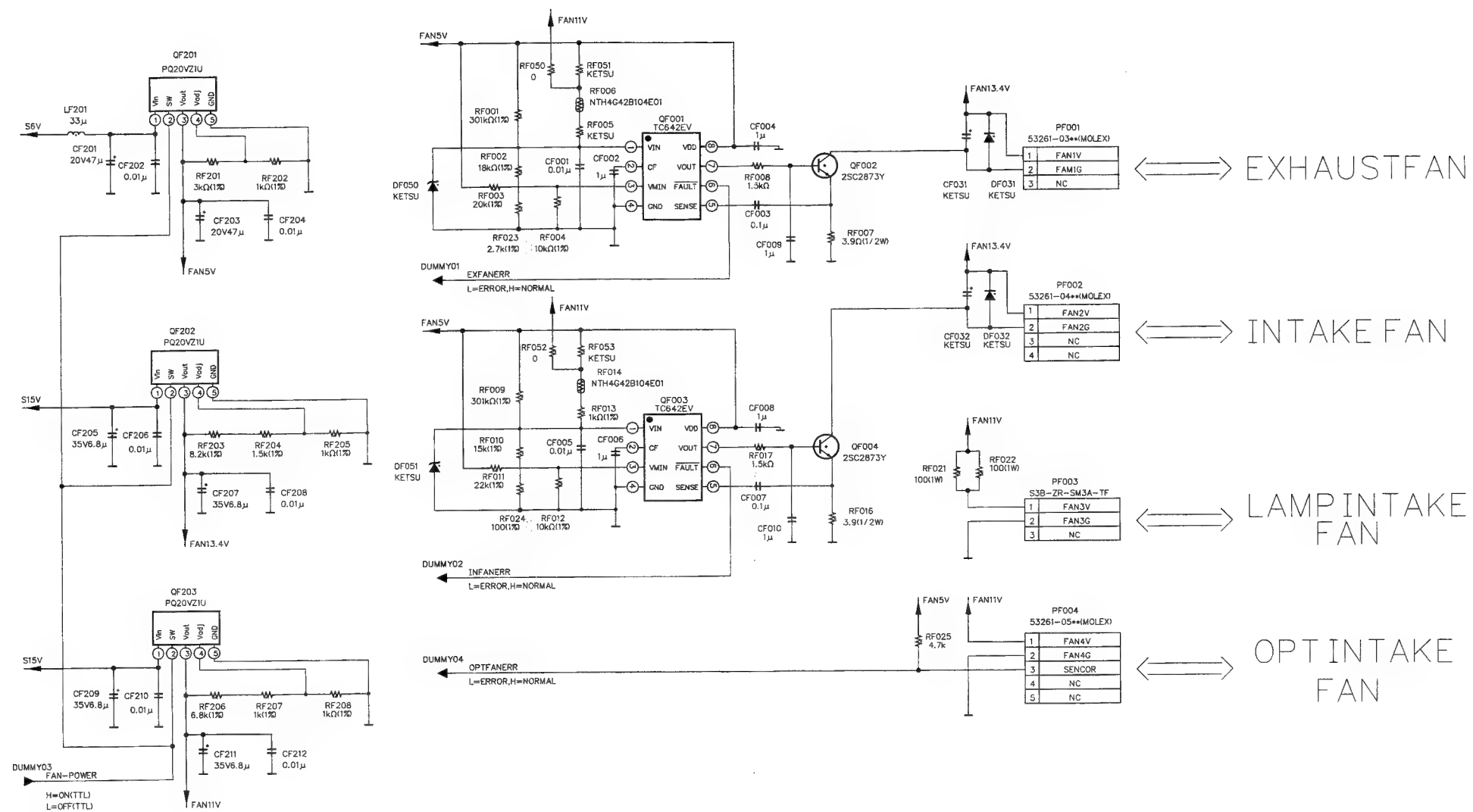


Fig. 2-5-10

A

6. PC BOARDS

6-1. Input PC Board

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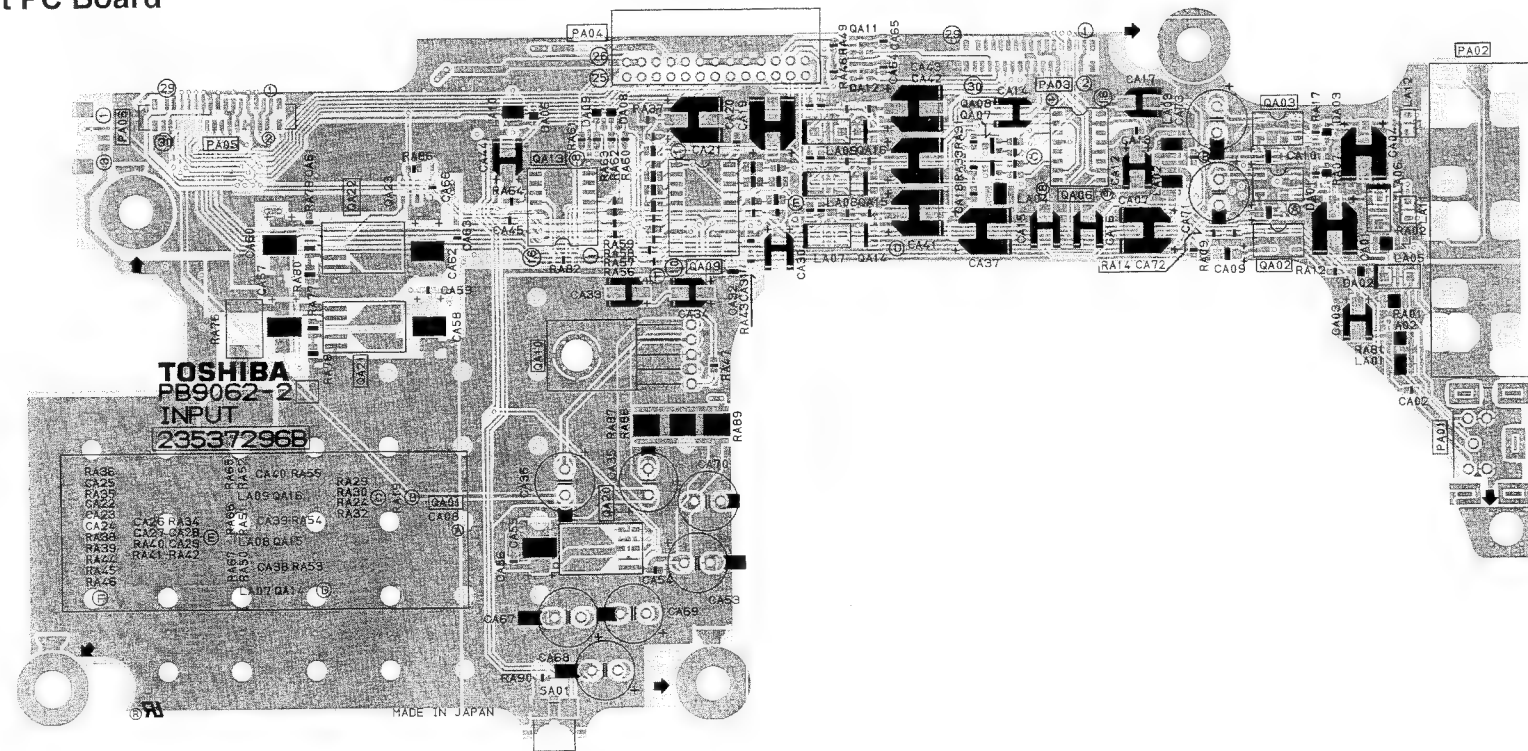


Fig. 2-6-1 U0022 Input PC Board (Top Side)

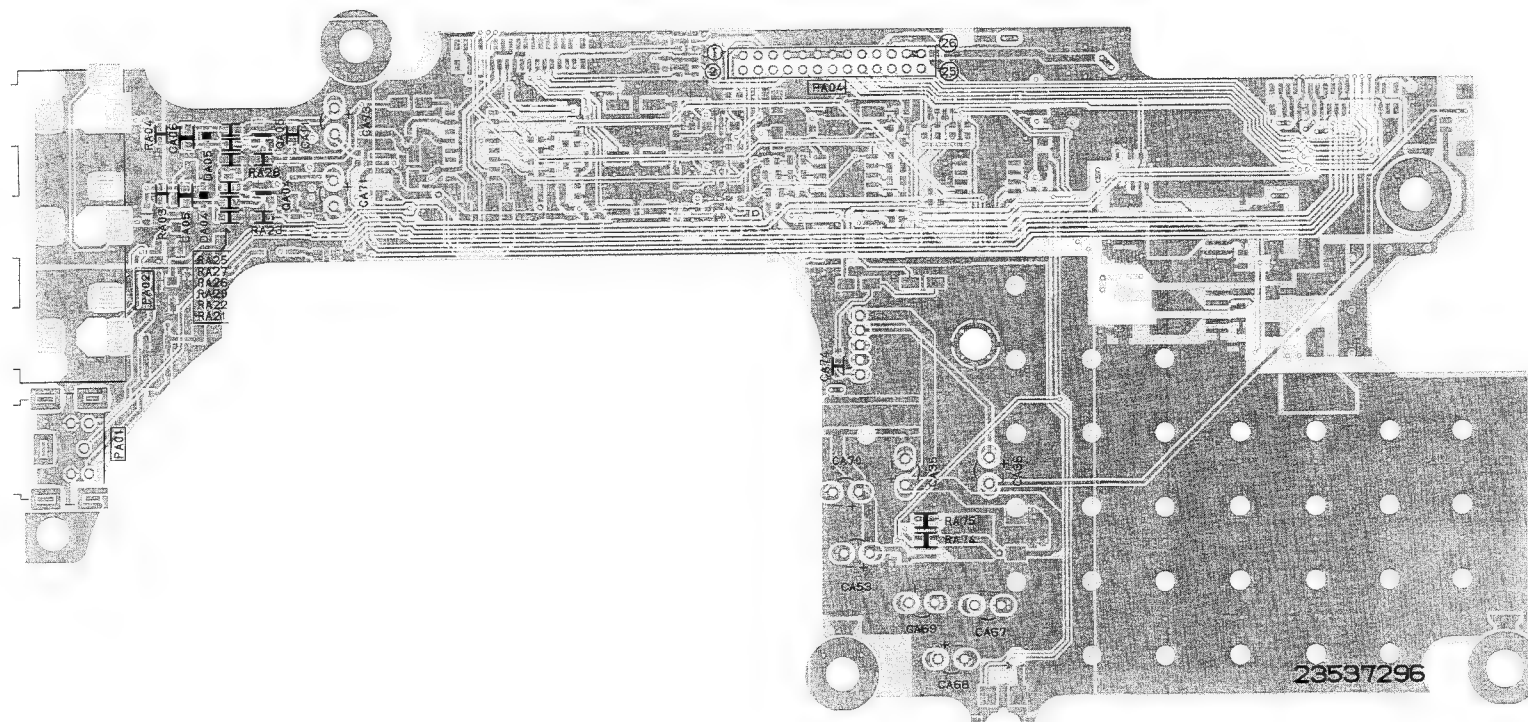
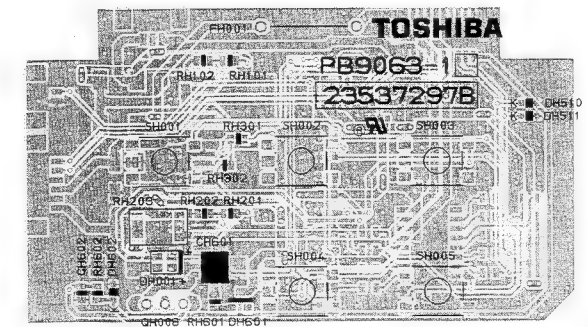
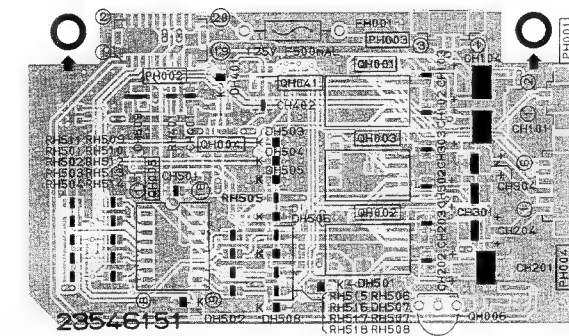


Fig. 2-6-2 U0022 Input PC Board (Bottom Side)

6-2. CAM Switch PC Board

Fig. 2-6-3 U0031
CAM Switch PC Board (Top Side)Fig. 2-6-4 U0031
CAM Switch PC Board (Bottom Side)

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6-3. Main PC Board

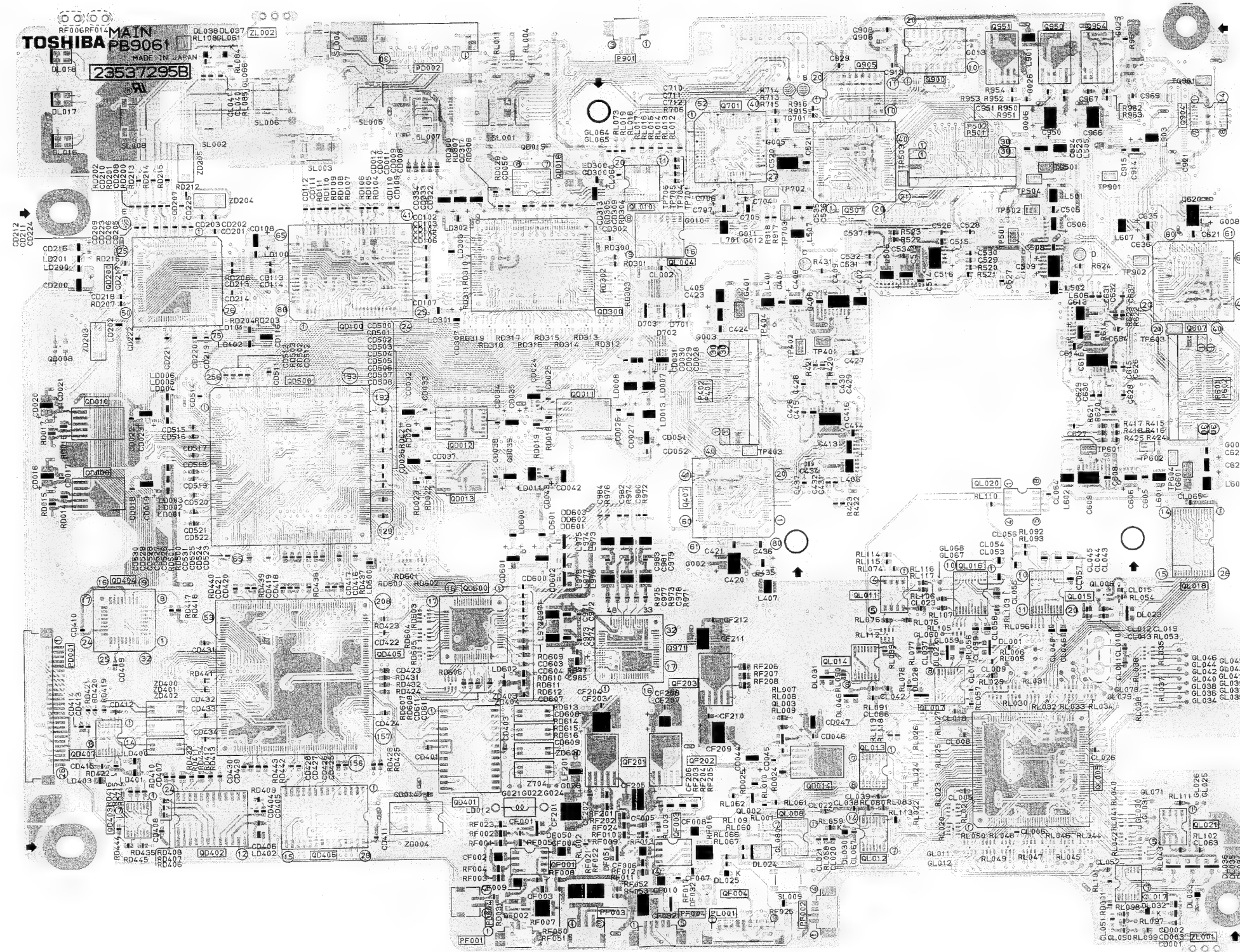


Fig. 2-6-5 U001 Main PC Board (Top Side)

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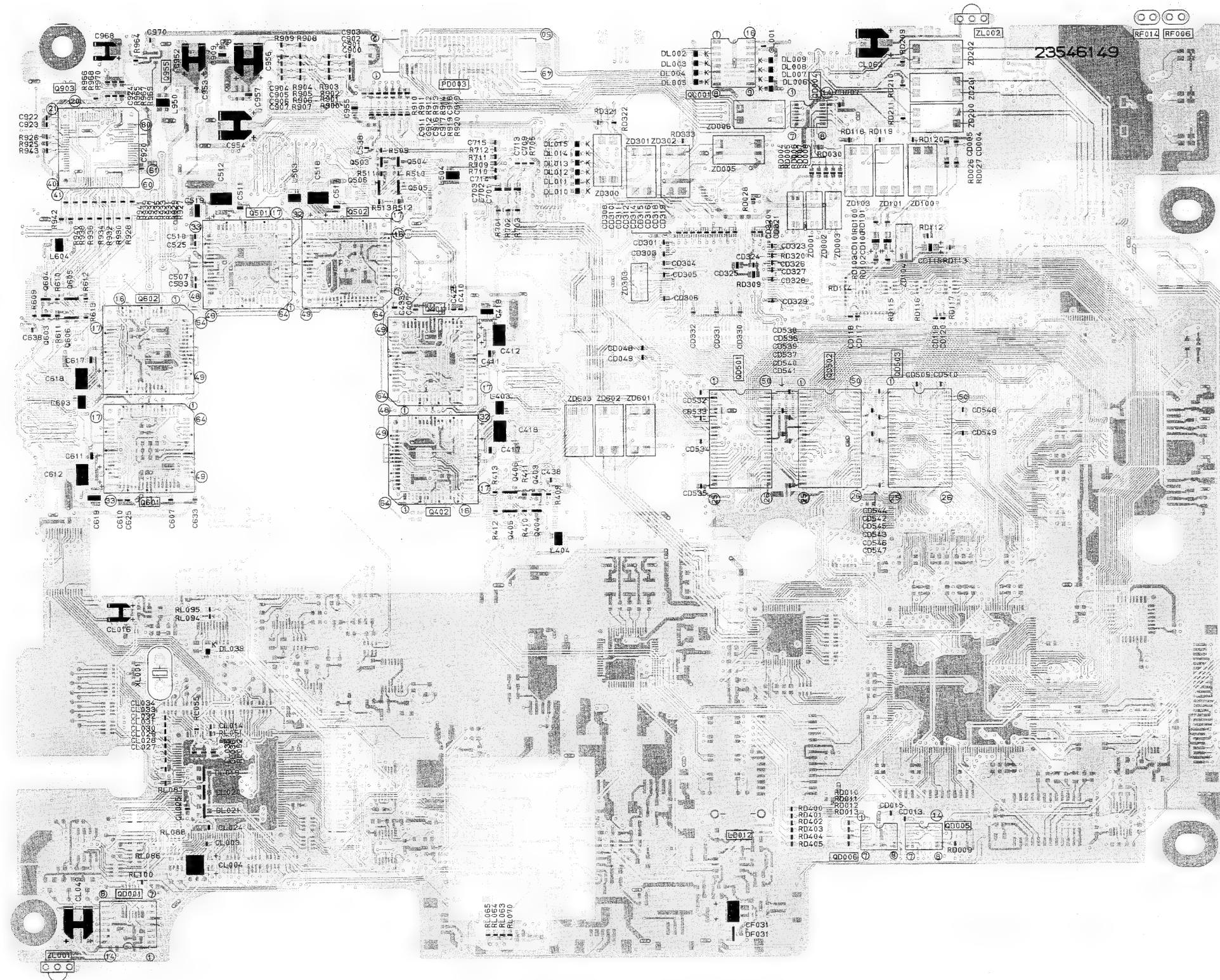


Fig. 2-6-6 U001 Main PC Board (Bottom Side)

6-4. RGB PC Board

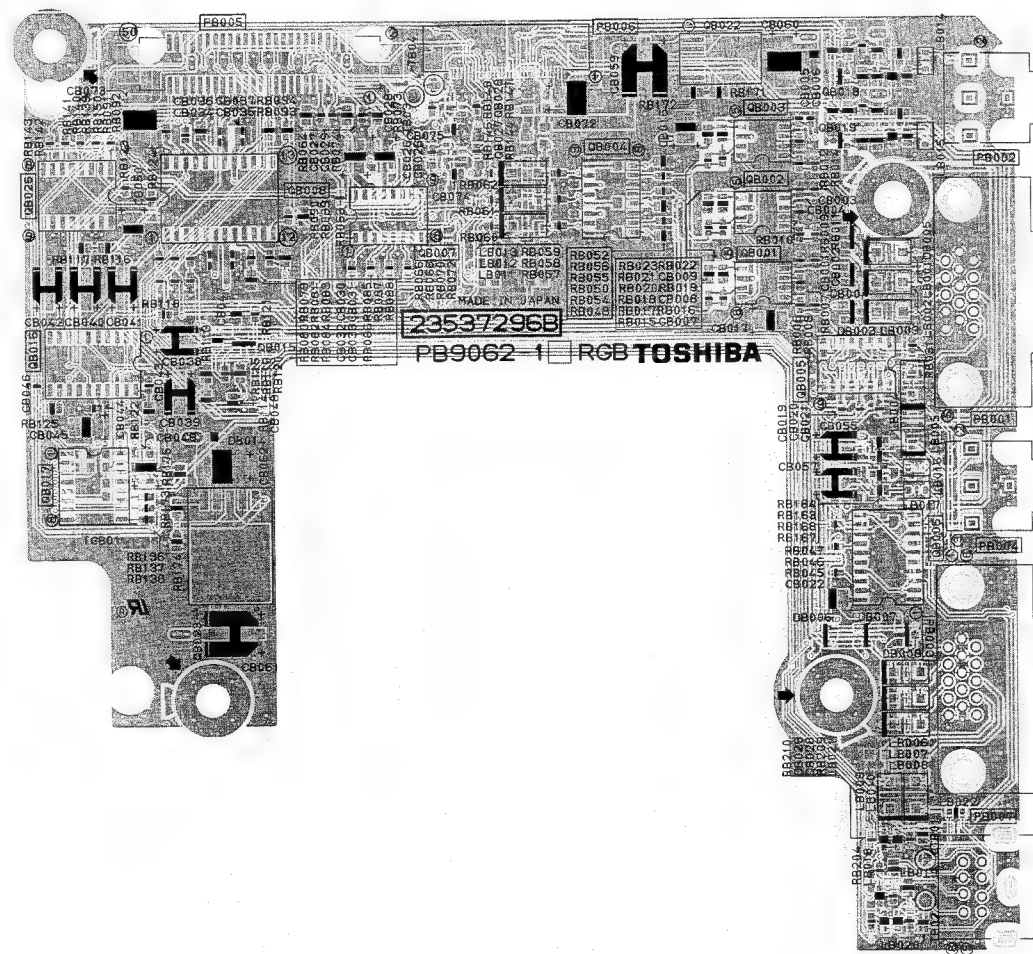


Fig. 2-6-7 U0021 RGB PC Board (Top Side)

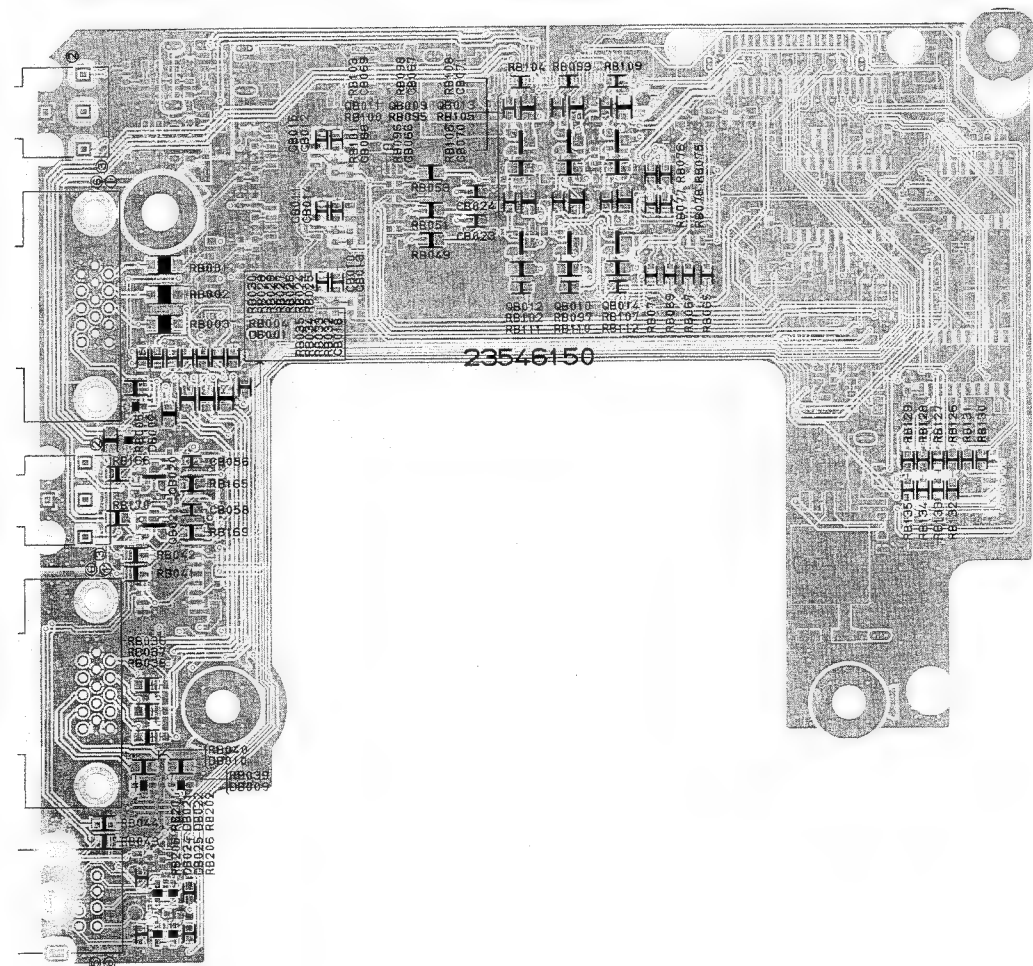


Fig. 2-6-8 U0021 RGB PC Board (Bottom Side)

6-5. LED PC Board

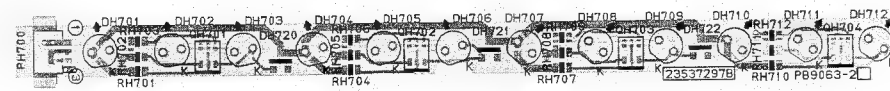


Fig. 2-6-9 U0032 LED PC Board (Top Side)

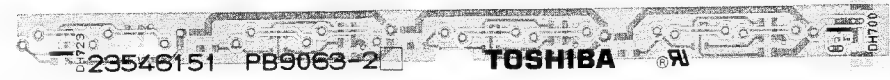


Fig. 2-6-10 U0032 LED PC Board (Bottom Side)

6-6. Sub Digital PC Board

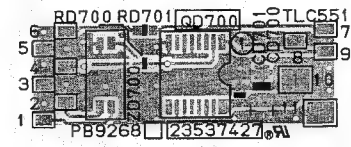


Fig. 2-6-11 U007 Sub Digital PC Board (Top Side)



Fig. 2-6-12 U007 Sub Digital PC Board (Bottom Side)

SECTION 3 PARTS LIST

SAFETY PRECAUTION

The parts identified by \triangle mark are critical for safety. Replace only with part number specified.

The mounting position of replacement is to be identical with originals.

The substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.

NOTICE

The part number must be used when ordering parts in order to assist in processing, be sure to include the model number and description.

Parts marked # are of chip type and mounted on original PC boards.

However, when they are placed for servicing works, use discrete parts listed on the parts list.

ABBREVIATIONS

1. Integrated circuit (IC)

2. Capacitor (Cap)

- Capacitance Tolerance (for Nominal Capacitance more than 10pF)

Table 3-2-1

Symbol	B	C	D	F	G	J	K	M	N
Tolerance %	± 0.1	± 0.25	± 0.5	± 1	± 2	± 5	± 10	± 20	± 30

Symbol	P	Q	T	U	V	W	X	Y	Z
Tolerance %	+ 100 0	+ 30 - 10	+ 50 - 10	+ 75 - 10	+ 20 - 10	+ 100 - 10	+ 40 - 20	+ 150 - 10	+ 80 - 20

Ex. 10 μ F J = 10 μ F \pm 5%

- Capacitance Tolerance (for Nominal Capacitance 10pF or less)

Table 3-2-2

Symbol	B	C	D	F	G
Tolerance pF	± 0.1	± 0.25	± 0.5	± 1	± 2

Ex. 10pF G = 10pF \pm 2pF

3. Resistor (Res)

- Resistance tolerance

Table 3-3-1

Symbol	B	C	D	F	G	J	K	M
Tolerance %	± 0.1	± 0.25	± 0.5	± 1	± 2	± 5	± 10	± 20

Ex. 470 Ω J = 470 Ω \pm 5%

4-3. Chassis Assembly

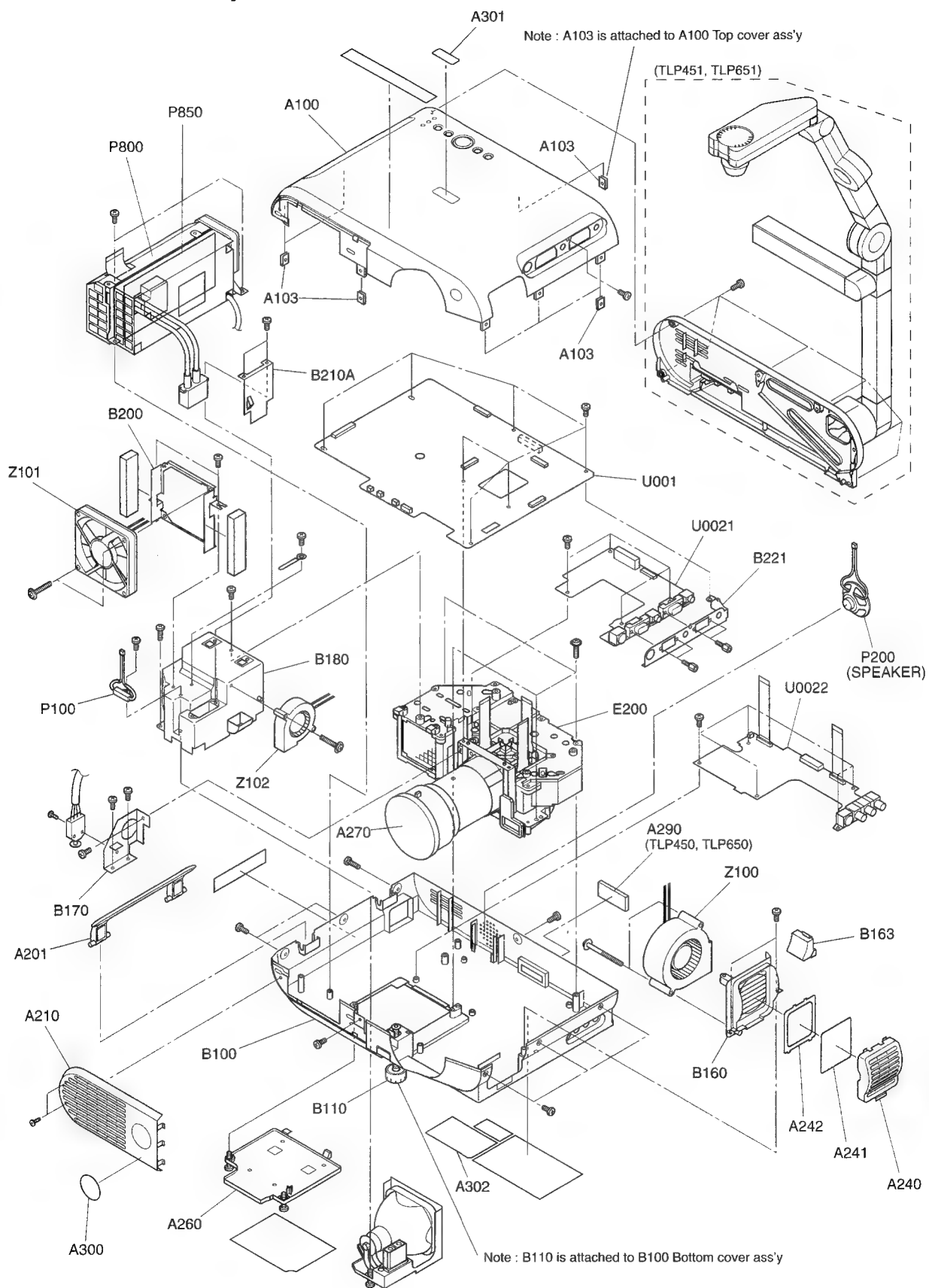


Fig. 3-4-3

4-4. Arm Assembly (TLP451, TLP651)

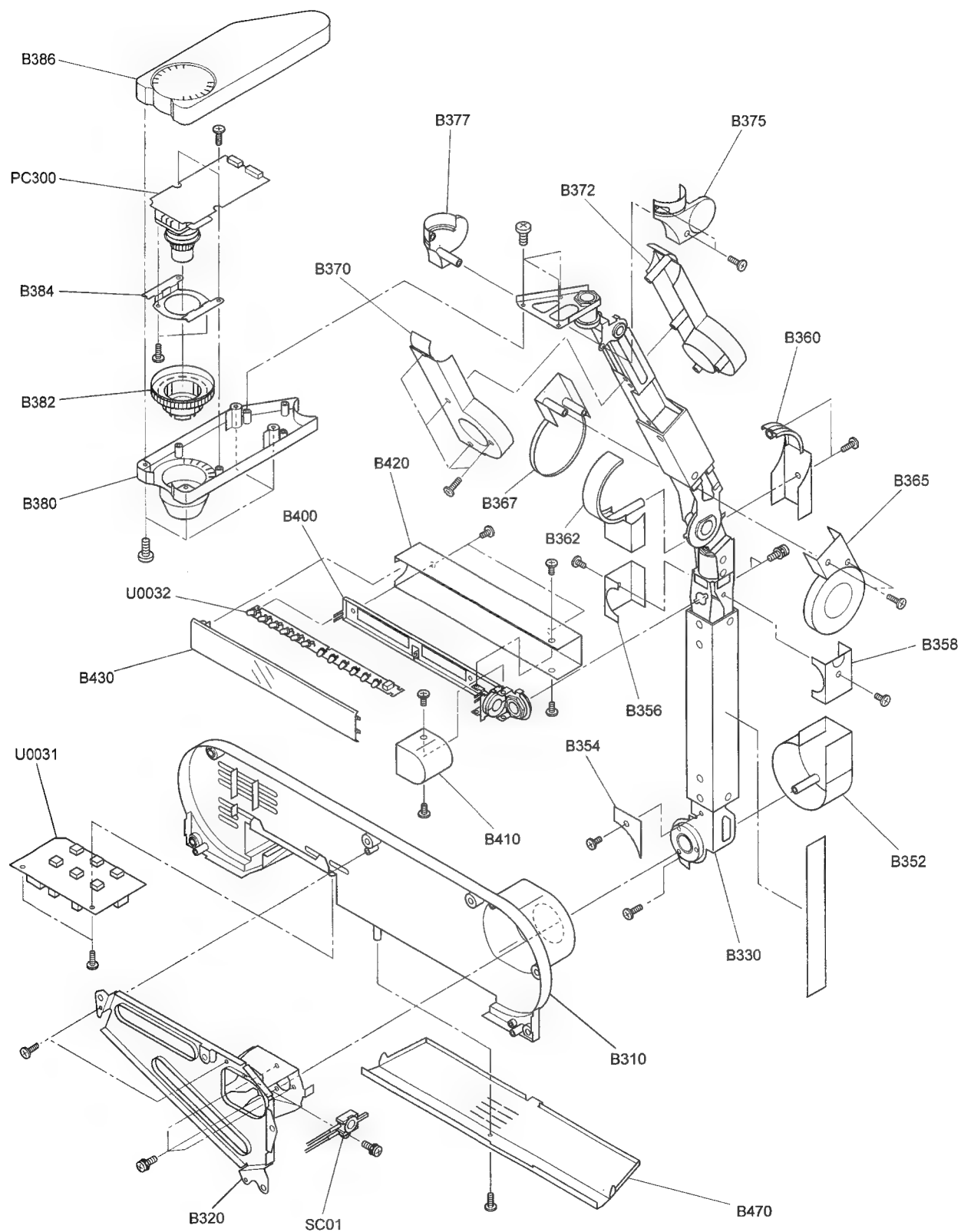


Fig. 3-4-4

5. PARTS LIST

LOCATION NUMBER	PART NUMBER	DESCRIPTION	LOCATION NUMBER	PART NUMBER	DESCRIPTION
- MECHANICAL PARTS -			△P100	23144598	Thermal Lead SW .OHD3-105B
A004	23588495	Case(Battery)	P200	23351150	Speaker
△A100	23549588	Top Cover Assy	△P800	23122374	Power Unit
A103	23747007	Nut	△P850	23122369	Lamp Power Unit
*b△A201	23436730	Handle	*c△PC300	23771010	Camera Block IKK81LC
*a△A201	23436737	Handle	*c SC01	23344401	Switch, Detect
△A210	23549571	Cover	△Y100	23368734	RGB Cable
△A240	23549572	Filter Cover	△Y101	23368732	A/V Cable
△A241	23466873	Air Filter	△Y102	23368733	Stereo Mini-cable
△A242	23466874	Air Filter	△Y105	23368676	Cable DSUB, 9P
△A260	23549589	Lamp Cover Assy	△Y106	23368677	Cable DIN4P-DSUB9P
△A270	23549574	Lens Cap	△Y107	23368718	Cable D-Sub, 9P
*d A290	23550810	Mask Sheet	△Y108	23368731	USB Cable
*e△A300	23550689	Front Tag	Y110	23368679	MAC Adaptor
*f△A300	23550690	Front Tag	Y120	23306333	Remote Control Receiver
*g△A300	23550793	Front Tag	△Y200	23563715	Owner's Manual (CD-ROM)*1
*h△A300	23550794	Front Tag	*i△Y201	23563712	Owner's Manual, English
△A301	23550693	Top Tag	*j△Y201	23563713	Owner's Manual, English
△A302	23550796	Label Rating(TLP450U)	*j△Y202	23563714	Owner's Manual, French/German
△A302	23550804	Label Rating(TLP450E)	*i△Y205	23176937	Power Cord 125V, 13A
△A302	23550795	Label Rating(TLP451U)	*j△Y205	23176002	Power Cord 250V
△A302	23550803	Label Rating(TLP451E)	*j△Y206	23372019	Power Cord 250V
△A302	23550692	Label Rating(TLP650U)	△Y210	23306332	Remote Control Unit
△A302	23550802	Label Rating(TLP650E)	Y250	23104032	Pointor
△A302	23550691	Label Rating(TLP651U)	Y260	23448559	Soft Case
△A302	23550801	Label Rating(TLP651E)	△Z100	23125487	Fan
A400	23064004	Case (TLP450U)	△Z101	23125873	Fan
A400	23064006	Case (TLP450E)	△Z102	23125874	Fan
A400	23064001	Case (TLP451U)	(Note)		
A400	23064003	Case (TLP451E)	*1: English, French, German, Cantonese, Mandarin, Korean		
A400	23525996	Case (TLP650U)	*a: TLP450, TLP451		
A400	23525998	Case (TLP650E)	*b: TLP650, TLP651		
A400	23525966	Case (TLP651U)	*c: TLP451, TLP651		
A400	23525995	Case (TLP651E)	*d: TLP450, TLP650		
A401	23935919	Packing	*e: TLP651		
*c A404	23945084	Cover	*f: TLP650		
*d A404	23945088	Cover	*g: TLP451		
A410	23918274	Accessory Box	*h: TLP450		
△B100	23411238	Chassis Bottom Assy	*i: TLP450U, TLP451U, TLP650U, TLP651U		
B110	23436731	Foot	*j: TLP450E, TLP451E, TLP650E, TLP651E		
B160	23528039	Holder			
△B163	23421992	Fan Mouth Piece			
B170	23841490	Bracket			
△B180	23448560	Lamp House Assy			
B200	23841491	Bracket			
B210A	23936010	Plate			
B221	23841493	Bracket			
*c△B310	23549570	Cover Assy			
*c△B320	23890831	Base Assy			
*c B330	23890832	Arm Assy			
*c△B352	23549566	Cover			
*c△B354	23549567	Cover			
*c△B356	23549564	Cover			
*c△B358	23549565	Cover			
*c△B360	23549522	Cover			
*c△B362	23549523	Cover			
*c△B365	23549524	Cover			
*c B367	23549525	Cover			
*c△B370	23549520	Cover			
*c△B372	23549521	Cover			
*c△B375	23549518	Cover			
*c△B377	23549519	Cover			
*c△B380	23549517	Cover			
*c B382	23549515	Focus Ring Cover			
*c△B384	23890821	Base			
*c△B386	23549516	Top Cover			
*c B400	23890837	Base			
*c B410	23549575	Cover			
*c△B420	23549576	Cover			
*c△B430	23549577	Cover			
*c B470	23421989	Plate			
*b△E200	23430655	Optical Engine CJ325TA			
*a△E200	23430673	Optical Engine CJ326TA			

LOCATION NUMBER	PART NUMBER	DESCRIPTION	LOCATION NUMBER	PART NUMBER	DESCRIPTION
- ELECTRICAL PARTS -					
U001	23783702	P C Board Assy Main(TLP650, TLP651)	QL020	23900971	IC LM75CIMX-5
U001	23783974	P C Board Assy Main(TLP450, TLP451)	QL021	23900971	IC LM75CIMX-5
- INTEGRATED CIRCUITS -			ZL001	23906782	IC TSOP1838
	Q401	23000101 IC ET6050SOB	ZL002	23906782	IC TSOP1838
*b	Q402	23000101 IC ET6050SOB	- TRANSISTORS -		
	Q407	23000102 IC ET1021FOA	Q403	A635620	Transistor, Chip 2SC4116-Y
	Q501	23000101 IC ET6050SOB	Q404	A6549570	Transistor, Chip 2SA1586-Y
*b	Q502	23000101 IC ET6050SOB	Q405	A6358620	Transistor, Chip 2SC3265-Y
	Q507	23000102 IC ET1021FOA	Q406	A6546370	Transistor, Chip 2SA1298-Y
	Q601	23000101 IC ET6050SOB	Q503	A635620	Transistor, Chip 2SC4116-Y
*b	Q602	23000101 IC ET6050SOB	Q504	A6549570	Transistor, Chip 2SA1586-Y
	Q607	23000102 IC ET1021FOA	Q505	A6358620	Transistor, Chip 2SC3265-Y
	Q701	23906361 IC CXA2111R	Q506	A6546370	Transistor, Chip 2SA1298-Y
	Q900	23906224 IC M62399FP	Q603	A635620	Transistor, Chip 2SC4116-Y
	Q903	23000964 IC ET2081FOA	Q604	A6549570	Transistor, Chip 2SA1586-Y
	Q904	20510122 IC TC74ACT04FT	Q605	A6358620	Transistor, Chip 2SC3265-Y
	Q905	23906661 IC M62393FP	Q606	A6546370	Transistor, Chip 2SA1298-Y
	Q906	B0370180 IC TA78L12F	QF002	A6341974	Transistor, Chip 2SC2873-Y
	Q950	70129738 IC PQ20VZ1U	QF004	A6341974	Transistor, Chip 2SC2873-Y
	Q951	70129738 IC PQ20VZ1U	QL002	A6365620	Transistor, Chip 2SC4116-Y
	Q954	70129738 IC PQ20VZ1U	QL003	A6365620	Transistor, Chip 2SC4116-Y
	Q955	A6030630 IC TC7S08F	- DIODES -		
	Q971	23000100 IC CXD3503R	D701	A7152750	Diode, Chip 1SS226
	QD001	23900974 IC ADXL202JQC	D702	A7152750	Diode, Chip 1SS226
	QD005	23906605 IC SN74LVC74APW	D703	A7152750	Diode, Chip 1SS226
	QD004	23000069 IC SN74LVC14APW	DD601	A7152750	Diode, Chip 1SS226
	QD006	23906604 IC SN74LVC04APW	DD602	A7152750	Diode, Chip 1SS226
	QD008	A6030640 IC TC7S32F	DD603	A7152750	Diode, Chip 1SS226
	QD009	70129738 IC PQ20VZ1U	DL001	A7150800	Diode, Chip 1SS187
	QD010	70129738 IC PQ20VZ1U	DL002	23357168	Diode, Zener UDZSTE176. 2B
	QD011	70129738 IC PQ20VZ1U	DL003	23357168	Diode, Zener UDZSTE176. 2B
	QD012	70129738 IC PQ20VZ1U	DL004	23357168	Diode, Zener UDZSTE176. 2B
	QD013	70129738 IC PQ20VZ1U	DL005	23357168	Diode, Zener UDZSTE176. 2B
	QD014	70129738 IC PQ20VZ1U	DL006	23357168	Diode, Zener UDZSTE176. 2B
	QD015	A6030620 IC TC7S04F	DL007	23357168	Diode, Zener UDZSTE176. 2B
	QD016	23000955 IC 74LVC125APWR	DL008	23357168	Diode, Zener UDZSTE176. 2B
	QD100	23906983 IC CXD2303AQ	DL009	23357168	Diode, Zener UDZSTE176. 2B
	QD200	23000959 IC SAA7114	DL010	23357168	Diode, Zener UDZSTE176. 2B
	QD300	23000068 IC AD9884KS-140	DL011	23357168	Diode, Zener UDZSTE176. 2B
	QD401	23000107 IC MB90098-101	DL012	23357168	Diode, Zener UDZSTE176. 2B
	QD402	23906942 IC 1CS1523M	DL013	23357168	Diode, Zener UDZSTE176. 2B
	QD403	23906604 IC SN74LVC04APW	DL014	23357168	Diode, Zener UDZSTE176. 2B
	QD404	23000120 IC SYG5X	DL015	23357168	Diode, Zener UDZSTE176. 2B
	QD405	23906667 IC EPF6024AQ208-2	DL016	23358539	Diode, LED SML-020MLTT6
	QD406	23906473 IC M51V8221A-30	DL017	23358539	Diode, LED SML-020MLTT6
	QD407	23905013 IC TLC2932	DL018	23358539	Diode, LED SML-020MLTT6
	QD500	23906982 IC 1P00C711	DL019	A7150800	Diode, Chip 1SS187
	QD501	23000112 IC 161610DTC-10	DL020	A7150800	Diode, Chip 1SS187
	QD502	23000112 IC 161610DTC-10	DL021	A7150800	Diode, Chip 1SS187
	QD503	23000112 IC 161610DTC-10	DL023	A7150800	Diode, Chip 1SS187
	QD600	23906984 IC MB40C950VPFV	DL024	23358539	Diode, LED SML-020MLTT6
	QF001	23000976 IC TC642VOA	DL025	23357169	Diode, Zener UDZSTE176. 8B
	QF003	23000976 IC TC642VOA	DL027	A7150800	Diode, Chip 1SS187
	QF201	70129738 IC PQ20VZ1U	DL028	A7150800	Diode, Chip 1SS187
	QF202	70129738 IC PQ20VZ1U	DL030	23357167	Diode, Zener UDZS5. 1B
	QF203	70129738 IC PQ20VZ1U	DL031	A7150800	Diode, Chip 1SS187
	QL001	23906234 IC M62320FP	DL032	23357168	Diode, Zener UDZSTE176. 2B
	QL004	23906234 IC M62320FP	DL033	23357168	Diode, Zener UDZSTE176. 2B
	QL005	23000104 IC HD64F7045F28	DL034	A7150800	Diode, Chip 1SS187
	QL006	70200430 IC RN5VD27A	DL035	A7150800	Diode, Chip 1SS187
	QL007	23000072 IC SN74LV123APW	DL036	A7150800	Diode, Chip 1SS187
	QL008	23906850 IC SN74LV14APWR	DL037	23357168	Diode, Zener UDZSTE176. 2B
	QL010	70200250 IC 74VHC541MTCX	DL038	23357168	Diode, Zener UDZSTE176. 2B
	QL011	23906999 IC CAT24WC16J	DL039	23357172	Diode, Zener UDZSTE1710B
	QL012	23000073 IC SN74LV125APW	L401	23245847	Coil, Chip TRF4330CC
	QL013	23000073 IC SN74LV125APW	L402	23245847	Coil, Chip TRF4330CC
	QL014	23906611 IC SN74LV14APWR	*b	L403	23245847 Coil, Chip TRF4330CC
	QL015	70200127 IC UPD4721GS	L404	23245847	Coil, Chip TRF4330CC
	QL016	70200127 IC UPD4721GS	L405	23245847	Coil, Chip TRF4330CC
	QL017	23906850 IC SN74LV14APWR	*b	L406	23245847 Coil, Chip TRF4330CC
	QL018	B0483329 IC TC55257DFTL-85L	L407	23245847	Coil, Chip TRF4330CC
			L501	23245847	Coil, Chip TRF4330CC
			L502	23245847	Coil, Chip TRF4330CC
			*b	L503	23245847 Coil, Chip TRF4330CC

(Note)

*a: TLP450, TLP451

*b: TLP650, TLP651

LOCATION NUMBER	PART NUMBER	DESCRIPTION		LOCATION NUMBER	PART NUMBER	DESCRIPTION	
L504	23245847	Coil, Chip	TRF4330CC	C427	24100104	Cap, Chip	0.1 μ F Z 25V
L505	23245847	Coil, Chip	TRF4330CC	C428	24100104	Cap, Chip	0.1 μ F Z 25V
*b L506	23245847	Coil, Chip	TRF4330CC	C429	24100104	Cap, Chip	0.1 μ F Z 25V
L507	23245847	Coil, Chip	TRF4330CC	C430	24100104	Cap, Chip	0.1 μ F Z 25V
L601	23245847	Coil, Chip	TRF4330CC	C431	24100104	Cap, Chip	0.1 μ F Z 25V
L602	23245847	Coil, Chip	TRF4330CC	C432	24100104	Cap, Chip	0.1 μ F Z 25V
*b L603	23245847	Coil, Chip	TRF4330CC	C433	24100104	Cap, Chip	0.1 μ F Z 25V
L604	23245847	Coil, Chip	TRF4330CC	C434	24100104	Cap, Chip	0.1 μ F Z 25V
L605	23245847	Coil, Chip	TRF4330CC	C435	24088079	Cap, Chip	10 μ F M 10V
*b L606	23245847	Coil, Chip	TRF4330CC	C436	24092294	Cap, Chip	0.33 μ F Z 16V
L607	23245847	Coil, Chip	TRF4330CC	C437	24100104	Cap, Chip	0.1 μ F Z 25V
L701	23245847	Coil, Chip	TRF4330CC	C438	24100104	Cap, Chip	0.1 μ F Z 25V
L901	23245847	Coil, Chip	TRF4330CC	C439	24436330	Cap, Ceramic	33pF J 50V
L903	23245847	Coil, Chip	TRF4330CC	C505	24092538	Cap, Chip	1 μ F Z 10V
L950	23245847	Coil, Chip	TRF4330CC	C506	24088085	Cap, Chip	22 μ F M 10V
L971	23245847	Coil, Chip	TRF4330CC	C507	24100103	Cap, Chip	0.01 μ F Z 50V
L972	23245847	Coil, Chip	TRF4330CC	C508	24092294	Cap, Chip	0.33 μ F Z 16V
L973	23245863	Coil	TRF4331CC	C509	24295106	Cap, Chip	10 μ F M 25V
L974	23245863	Coil	TRF4331CC	C510	24100104	Cap, Chip	0.1 μ F Z 25V
L975	23245863	Coil	TRF4331CC	C511	24092294	Cap, Chip	0.33 μ F Z 16V
L976	23245861	Coil, Chip	TRF4151CC	C512	24295106	Cap, Chip	10 μ F M 25V
L977	23245861	Coil, Chip	TRF4151CC	*b C513	24088085	Cap, Chip	22 μ F M 10V
L978	23245861	Coil, Chip	TRF4151CC	*b C514	24092538	Cap, Chip	1 μ F Z 10V
LD001	23103793	Coil, Chip	MMZ2012S121A	*b C515	24092294	Cap, Chip	0.33 μ F Z 16V
LD002	23103793	Coil, Chip	MMZ2012S121A	*b C516	24295106	Cap, Chip	10 μ F M 25V
LD003	23103793	Coil, Chip	MMZ2012S121A	*b C517	24092294	Cap, Chip	0.33 μ F Z 16V
LD004	23103793	Coil, Chip	MMZ2012S121A	*b C518	24295106	Cap, Chip	10 μ F M 25V
LD005	23103793	Coil, Chip	MMZ2012S121A	C519	24088093	Cap, Chip	15 μ F M 16V
LD006	23103793	Coil, Chip	MMZ2012S121A	C520	24295106	Cap, Chip	10 μ F M 25V
LD007	23245851	Coil, Chip	TRF4220CC	C521	24092294	Cap, Chip	0.33 μ F Z 16V
LD008	23245851	Coil, Chip	TRF4220CC	C523	24088096	Cap, Chip	4.7 μ F M 25V
LD011	23245851	Coil, Chip	TRF4220CC	C524	24092294	Cap, Chip	0.33 μ F Z 16V
LD012	23103880	Coil, Choke	TEM2011Y	C525	24100104	Cap, Chip	0.1 μ F Z 25V
LD013	23245849	Coil, Chip	TRF4101CC	C526	24100104	Cap, Chip	0.1 μ F Z 25V
LD100	23103793	Coil, Chip	MMZ2012S121A	C527	24100104	Cap, Chip	0.1 μ F Z 25V
LD101	23103793	Coil, Chip	MMZ2012S121A	C528	24100104	Cap, Chip	0.1 μ F Z 25V
LD102	23103793	Coil, Chip	MMZ2012S121A	C529	24100104	Cap, Chip	0.1 μ F Z 25V
LD200	23103793	Coil, Chip	MMZ2012S121A	C530	24100104	Cap, Chip	0.1 μ F Z 25V
LD201	23103793	Coil, Chip	MMZ2012S121A	C531	24100104	Cap, Chip	0.1 μ F Z 25V
LD202	23103793	Coil, Chip	MMZ2012S121A	C532	24100104	Cap, Chip	0.1 μ F Z 25V
LD300	23103793	Coil, Chip	MMZ2012S121A	C533	24100104	Cap, Chip	0.1 μ F Z 25V
LD301	23103793	Coil, Chip	MMZ2012S121A	C534	24100104	Cap, Chip	0.1 μ F Z 25V
LD302	23103793	Coil, Chip	MMZ2012S121A	C535	24088079	Cap, Chip	10 μ F M 10V
LD303	23103793	Coil, Chip	MMZ2012S121A	C536	24092294	Cap, Chip	0.33 μ F Z 16V
LD400	23103793	Coil, Chip	MMZ2012S121A	C537	24100104	Cap, Chip	0.1 μ F Z 25V
LD401	23103793	Coil, Chip	MMZ2012S121A	C538	24100104	Cap, Chip	0.1 μ F Z 25V
LD402	23103793	Coil, Chip	MMZ2012S121A	C539	24436330	Cap, Ceramic	33pF J 50V
LD403	23103793	Coil, Chip	MMZ2012S121A	C605	24092538	Cap, Chip	1 μ F Z 10V
LD500	23103793	Coil, Chip	MMZ2012S121A	C606	24088085	Cap, Chip	22 μ F M 10V
LD600	23103793	Coil, Chip	MMZ2012S121A	C607	24100103	Cap, Chip	0.01 μ F Z 50V
LD601	23103793	Coil, Chip	MMZ2012S121A	C608	24092294	Cap, Chip	0.33 μ F Z 16V
LD602	23103793	Coil, Chip	MMZ2012S121A	C609	24295106	Cap, Chip	10 μ F M 25V
LF201	23245847	Coil, Chip	TRF4330CC	C610	24100104	Cap, Chip	0.1 μ F Z 25V
- CAPACITORS -				C611	24092294	Cap, Chip	0.33 μ F Z 16V
C405	24092538	Cap, Chip	1 μ F Z 10V	C612	24295106	Cap, Chip	10 μ F M 25V
C406	24088085	Cap, Chip	22 μ F M 10V	*b C613	24088085	Cap, Chip	22 μ F M 10V
C407	24100103	Cap, Chip	0.01 μ F Z 50V	*b C614	24092538	Cap, Chip	1 μ F Z 10V
C408	24092294	Cap, Chip	0.33 μ F Z 16V	*b C615	24092294	Cap, Chip	0.33 μ F Z 16V
C409	24295106	Cap, Chip	10 μ F M 25V	*b C616	24295106	Cap, Chip	10 μ F M 25V
C410	24100104	Cap, Chip	0.1 μ F Z 25V	*b C617	24092294	Cap, Chip	0.33 μ F Z 16V
C411	24092294	Cap, Chip	0.33 μ F Z 16V	*b C618	24295106	Cap, Chip	10 μ F M 25V
C412	24295106	Cap, Chip	10 μ F M 25V	C619	24088093	Cap, Chip	15 μ F M 16V
*b C413	24088085	Cap, Chip	22 μ F M 10V	C620	24295106	Cap, Chip	10 μ F M 25V
*b C414	24092538	Cap, Chip	1 μ F Z 10V	C621	24092294	Cap, Chip	0.33 μ F Z 16V
*b C415	24092294	Cap, Chip	0.33 μ F Z 16V	C623	24088096	Cap, Chip	4.7 μ F M 25V
*b C416	24295106	Cap, Chip	10 μ F M 25V	C624	24092294	Cap, Chip	0.33 μ F Z 16V
*b C417	24092294	Cap, Chip	0.33 μ F Z 16V	C625	24100104	Cap, Chip	0.1 μ F Z 25V
*b C418	24295106	Cap, Chip	10 μ F M 25V	C626	24100104	Cap, Chip	0.1 μ F Z 25V
C419	24088093	Cap, Chip	15 μ F M 16V	C627	24100104	Cap, Chip	0.1 μ F Z 25V
C420	24295106	Cap, Chip	10 μ F M 25V	C628	24100104	Cap, Chip	0.1 μ F Z 25V
C421	24092294	Cap, Chip	0.33 μ F Z 16V	C629	24100104	Cap, Chip	0.1 μ F Z 25V
C423	24088096	Cap, Chip	4.7 μ F M 25V	C630	24100104	Cap, Chip	0.1 μ F Z 25V
C424	24092294	Cap, Chip	0.33 μ F Z 16V	C631	24100104	Cap, Chip	0.1 μ F Z 25V
C425	24100104	Cap, Chip	0.1 μ F Z 25V	C632	24100104	Cap, Chip	0.1 μ F Z 25V
C426	24100104	Cap, Chip	0.1 μ F Z 25V	C633	24100104	Cap, Chip	0.1 μ F Z 25V

(Note)

*a: TLP450, TLP451

*b: TLP650, TLP651

LOCATION NUMBER	PART NUMBER	DESCRIPTION			LOCATION NUMBER	PART NUMBER	DESCRIPTION		
C634	24100104	Cap, Chip	0.1 μ F	Z 25V	CD005	24109103	Cap, Chip	0.01 μ F	K 25V
C635	24088079	Cap, Chip	10 μ F	M 10V	CD007	24092538	Cap, Chip	1 μ F	Z 10V
C636	24092294	Cap, Chip	0.33 μ F	Z 16V	CD008	24105101	Cap, Chip	100pF	J 50V
C637	24100104	Cap, Chip	0.1 μ F	Z 25V	CD009	24105101	Cap, Chip	100pF	J 50V
C638	24100104	Cap, Chip	0.1 μ F	Z 25V	CD010	24105101	Cap, Chip	100pF	J 50V
C639	24436330	Cap, Ceramic	33pF	J 50V	CD011	24105101	Cap, Chip	100pF	J 50V
C701	24092441	Cap, Chip	1 μ F	Z 16V	CD012	24105101	Cap, Chip	100pF	J 50V
C702	24092441	Cap, Chip	1 μ F	Z 16V	CD013	24092538	Cap, Chip	1 μ F	Z 10V
C703	24092441	Cap, Chip	1 μ F	Z 16V	CD014	24092538	Cap, Chip	1 μ F	Z 10V
C704	24092538	Cap, Chip	1 μ F	Z 10V	CD015	24092538	Cap, Chip	1 μ F	Z 10V
C705	24088079	Cap, Chip	10 μ F	M 10V	CD016	24088951	Cap, Chip	6.8 μ F	M 16V
C706	24092538	Cap, Chip	1 μ F	Z 10V	CD017	24092538	Cap, Chip	1 μ F	Z 10V
C707	24088079	Cap, Chip	10 μ F	M 10V	CD018	24092538	Cap, Chip	1 μ F	Z 10V
C709	24100104	Cap, Chip	0.1 μ F	Z 25V	CD019	24088951	Cap, Chip	6.8 μ F	M 16V
C710	24100104	Cap, Chip	0.1 μ F	Z 25V	CD020	24088951	Cap, Chip	6.8 μ F	M 16V
C711	24100104	Cap, Chip	0.1 μ F	Z 25V	CD021	24092538	Cap, Chip	1 μ F	Z 10V
C712	24100104	Cap, Chip	0.1 μ F	Z 25V	CD022	24092538	Cap, Chip	1 μ F	Z 10V
C713	24100104	Cap, Chip	0.1 μ F	Z 25V	CD023	24088951	Cap, Chip	6.8 μ F	M 16V
C714	24100104	Cap, Chip	0.1 μ F	Z 25V	CD024	24088951	Cap, Chip	6.8 μ F	M 16V
C715	24100104	Cap, Chip	0.1 μ F	Z 25V	CD025	24092538	Cap, Chip	1 μ F	Z 10V
C900	24100104	Cap, Chip	0.1 μ F	Z 25V	CD026	24092538	Cap, Chip	1 μ F	Z 10V
C901	24100104	Cap, Chip	0.1 μ F	Z 25V	CD027	24088079	Cap, Chip	10 μ F	M 10V
C902	24100104	Cap, Chip	0.1 μ F	Z 25V	CD028	24088080	Cap, Chip	33 μ F	M 10V
C903	24100104	Cap, Chip	0.1 μ F	Z 25V	CD029	24092538	Cap, Chip	1 μ F	Z 10V
C904	24100104	Cap, Chip	0.1 μ F	Z 25V	CD030	24088080	Cap, Chip	33 μ F	M 10V
C905	24100104	Cap, Chip	0.1 μ F	Z 25V	CD031	24092538	Cap, Chip	1 μ F	Z 10V
C906	24100104	Cap, Chip	0.1 μ F	Z 25V	CD032	24088951	Cap, Chip	6.8 μ F	M 16V
C907	24100104	Cap, Chip	0.1 μ F	Z 25V	CD033	24092538	Cap, Chip	1 μ F	Z 10V
C908	24092538	Cap, Chip	1 μ F	Z 10V	CD034	24092538	Cap, Chip	1 μ F	Z 10V
C909	24088079	Cap, Chip	10 μ F	M 10V	CD035	24088951	Cap, Chip	6.8 μ F	M 16V
C911	24092538	Cap, Chip	1 μ F	Z 10V	CD036	24088951	Cap, Chip	6.8 μ F	M 16V
C912	24092538	Cap, Chip	1 μ F	Z 10V	CD037	24092538	Cap, Chip	1 μ F	Z 10V
C913	24092538	Cap, Chip	1 μ F	Z 10V	CD038	24092538	Cap, Chip	1 μ F	Z 10V
C914	24088079	Cap, Chip	10 μ F	M 10V	CD039	24088951	Cap, Chip	6.8 μ F	M 16V
C915	24092538	Cap, Chip	1 μ F	Z 10V	CD042	24088951	Cap, Chip	6.8 μ F	M 16V
C916	24100104	Cap, Chip	0.1 μ F	Z 25V	CD043	24092538	Cap, Chip	1 μ F	Z 10V
C917	24100104	Cap, Chip	0.1 μ F	Z 25V	CD044	24088951	Cap, Chip	6.8 μ F	M 16V
C918	24100104	Cap, Chip	0.1 μ F	Z 25V	CD045	24092538	Cap, Chip	1 μ F	Z 10V
C919	24100104	Cap, Chip	0.1 μ F	Z 25V	CD046	24092538	Cap, Chip	1 μ F	Z 10V
C920	24092538	Cap, Chip	1 μ F	Z 10V	CD047	24088951	Cap, Chip	6.8 μ F	M 16V
C921	24092538	Cap, Chip	1 μ F	Z 10V	CD050	24092538	Cap, Chip	1 μ F	Z 10V
C922	24092538	Cap, Chip	1 μ F	Z 10V	CD052	24092538	Cap, Chip	1 μ F	Z 10V
C923	24092538	Cap, Chip	1 μ F	Z 10V	CD100	24088079	Cap, Chip	10 μ F	M 10V
C924	24092538	Cap, Chip	1 μ F	Z 10V	CD101	24088079	Cap, Chip	10 μ F	M 10V
C929	24092538	Cap, Chip	1 μ F	Z 10V	CD102	24092538	Cap, Chip	1 μ F	Z 10V
C950	24295106	Cap, Chip	10 μ F	M 25V	CD103	24092538	Cap, Chip	1 μ F	Z 10V
C951	24092538	Cap, Chip	1 μ F	Z 10V	CD104	24092538	Cap, Chip	1 μ F	Z 10V
C952	24619099	Cap, Chip	33 μ F	M 10V	CD105	24092538	Cap, Chip	1 μ F	Z 10V
C953	24092538	Cap, Chip	1 μ F	Z 10V	CD106	24092538	Cap, Chip	1 μ F	Z 10V
C954	24619106	Cap, Chip	33 μ F	M 25V	CD107	24092538	Cap, Chip	1 μ F	Z 10V
C955	24092293	Cap, Chip	0.1 μ F	Z 25V	CD108	24088951	Cap, Chip	6.8 μ F	M 16V
C956	24619106	Cap, Chip	33 μ F	M 25V	CD109	24092538	Cap, Chip	1 μ F	Z 10V
C957	24092441	Cap, Chip	1 μ F	Z 16V	CD110	24092538	Cap, Chip	1 μ F	Z 10V
C966	24295106	Cap, Chip	10 μ F	M 25V	CD111	24092538	Cap, Chip	1 μ F	Z 10V
C967	24092538	Cap, Chip	1 μ F	Z 10V	CD112	24092538	Cap, Chip	1 μ F	Z 10V
C968	24619096	Cap, Chip	22 μ F	M 6.3V	CD113	24092538	Cap, Chip	1 μ F	Z 10V
C969	24092538	Cap, Chip	1 μ F	Z 10V	CD114	24092538	Cap, Chip	1 μ F	Z 10V
C970	24092538	Cap, Chip	1 μ F	Z 10V	CD115	24088079	Cap, Chip	10 μ F	M 10V
C971	24088079	Cap, Chip	10 μ F	M 10V	CD116	24088951	Cap, Chip	6.8 μ F	M 16V
C972	24092538	Cap, Chip	1 μ F	Z 10V	CD117	24092538	Cap, Chip	1 μ F	Z 10V
C973	24088079	Cap, Chip	10 μ F	M 10V	CD118	24092538	Cap, Chip	1 μ F	Z 10V
C974	24092538	Cap, Chip	1 μ F	Z 10V	CD119	24092538	Cap, Chip	1 μ F	Z 10V
C977	24100104	Cap, Chip	0.1 μ F	Z 25V	CD120	24092538	Cap, Chip	1 μ F	Z 10V
C978	24100104	Cap, Chip	0.1 μ F	Z 25V	CD200	24088079	Cap, Chip	10 μ F	M 10V
C979	24109331	Cap, Chip	330pF	K 50V	CD201	24092538	Cap, Chip	1 μ F	Z 10V
C980	24109681	Cap, Chip	680pF	K 50V	CD202	24105090	Cap, Chip	9pF	J 50V
C981	24109331	Cap, Chip	330pF	K 50V	CD203	24105090	Cap, Chip	9pF	J 50V
C982	24109681	Cap, Chip	680pF	K 50V	CD205	24092538	Cap, Chip	1 μ F	Z 10V
C983	24109331	Cap, Chip	330pF	K 50V	CD206	24092538	Cap, Chip	1 μ F	Z 10V
C984	24109681	Cap, Chip	680pF	K 50V	CD207	24109473	Cap, Chip	0.047 μ F	K 25V
C985	24088079	Cap, Chip	10 μ F	M 10V	CD208	24109473	Cap, Chip	0.047 μ F	K 25V
CD001	24092538	Cap, Chip	1 μ F	Z 10V	CD209	24092538	Cap, Chip	1 μ F	Z 10V
CD002	24092573	Cap, Chip	0.47 μ F	K 16V	CD210	24109473	Cap, Chip	0.047 μ F	K 25V
CD003	24092573	Cap, Chip	0.47 μ F	K 16V	CD211	24092538	Cap, Chip	1 μ F	Z 10V
CD004	24109103	Cap, Chip	0.01 μ F	K 25V	CD212	24092538	Cap, Chip	1 μ F	Z 10V

LOCATION NUMBER	PART NUMBER	DESCRIPTION			LOCATION NUMBER	PART NUMBER	DESCRIPTION		
CD213	24092538	Cap, Chip	1 μ F	Z 10V	CD431	24092538	Cap, Chip	1 μ F	Z 10V
CD214	24092538	Cap, Chip	1 μ F	Z 10V	CD432	24092538	Cap, Chip	1 μ F	Z 10V
CD216	24088079	Cap, Chip	10 μ F	M 10V	CD433	24092538	Cap, Chip	1 μ F	Z 10V
CD217	24092538	Cap, Chip	1 μ F	Z 10V	CD434	24092538	Cap, Chip	1 μ F	Z 10V
CD218	24092538	Cap, Chip	1 μ F	Z 10V	CD500	24092538	Cap, Chip	1 μ F	Z 10V
CD219	24092538	Cap, Chip	1 μ F	Z 10V	CD501	24092538	Cap, Chip	1 μ F	Z 10V
CD220	24092538	Cap, Chip	1 μ F	Z 10V	CD502	24092538	Cap, Chip	1 μ F	Z 10V
CD221	24092538	Cap, Chip	1 μ F	Z 10V	CD503	24092538	Cap, Chip	1 μ F	Z 10V
CD222	24092538	Cap, Chip	1 μ F	Z 10V	CD504	24092538	Cap, Chip	1 μ F	Z 10V
CD223	24092538	Cap, Chip	1 μ F	Z 10V	CD505	24092538	Cap, Chip	1 μ F	Z 10V
CD224	24092538	Cap, Chip	1 μ F	Z 10V	CD506	24092538	Cap, Chip	1 μ F	Z 10V
CD225	24109473	Cap, Chip	0.047 μ F	K 25V	CD507	24092538	Cap, Chip	1 μ F	Z 10V
CD300	24088080	Cap, Chip	33 μ F	M 10V	CD508	24092538	Cap, Chip	1 μ F	Z 10V
CD301	24092538	Cap, Chip	1 μ F	Z 10V	CD509	24092538	Cap, Chip	1 μ F	Z 10V
CD302	24092538	Cap, Chip	1 μ F	Z 10V	CD510	24092538	Cap, Chip	1 μ F	Z 10V
CD303	24092538	Cap, Chip	1 μ F	Z 10V	CD511	24092538	Cap, Chip	1 μ F	Z 10V
CD304	24092538	Cap, Chip	1 μ F	Z 10V	CD512	24092538	Cap, Chip	1 μ F	Z 10V
CD305	24092538	Cap, Chip	1 μ F	Z 10V	CD513	24092538	Cap, Chip	1 μ F	Z 10V
CD306	24092538	Cap, Chip	1 μ F	Z 10V	CD514	24092538	Cap, Chip	1 μ F	Z 10V
CD307	24088079	Cap, Chip	10 μ F	M 10V	CD515	24092538	Cap, Chip	1 μ F	Z 10V
CD308	24092538	Cap, Chip	1 μ F	Z 10V	CD516	24092538	Cap, Chip	1 μ F	Z 10V
CD309	24109473	Cap, Chip	0.047 μ F	K 25V	CD517	24092538	Cap, Chip	1 μ F	Z 10V
CD310	24092538	Cap, Chip	1 μ F	Z 10V	CD518	24092538	Cap, Chip	1 μ F	Z 10V
CD311	24092538	Cap, Chip	1 μ F	Z 10V	CD519	24092538	Cap, Chip	1 μ F	Z 10V
CD312	24092538	Cap, Chip	1 μ F	Z 10V	CD520	24092538	Cap, Chip	1 μ F	Z 10V
CD313	24109473	Cap, Chip	0.047 μ F	K 25V	CD521	24092538	Cap, Chip	1 μ F	Z 10V
CD314	24092538	Cap, Chip	1 μ F	Z 10V	CD522	24092538	Cap, Chip	1 μ F	Z 10V
CD315	24092538	Cap, Chip	1 μ F	Z 10V	CD523	24092538	Cap, Chip	1 μ F	Z 10V
CD316	24092538	Cap, Chip	1 μ F	Z 10V	CD524	24092538	Cap, Chip	1 μ F	Z 10V
CD317	24109473	Cap, Chip	0.047 μ F	K 25V	CD525	24092538	Cap, Chip	1 μ F	Z 10V
CD318	24092538	Cap, Chip	1 μ F	Z 10V	CD526	24092538	Cap, Chip	1 μ F	Z 10V
CD319	24092538	Cap, Chip	1 μ F	Z 10V	CD527	24092538	Cap, Chip	1 μ F	Z 10V
CD320	24092538	Cap, Chip	1 μ F	Z 10V	CD528	24092538	Cap, Chip	1 μ F	Z 10V
CD321	24092538	Cap, Chip	1 μ F	Z 10V	CD529	24092538	Cap, Chip	1 μ F	Z 10V
CD322	24088080	Cap, Chip	33 μ F	M 10V	CD530	24092538	Cap, Chip	1 μ F	Z 10V
CD323	24092538	Cap, Chip	1 μ F	Z 10V	CD531	24092538	Cap, Chip	1 μ F	Z 10V
CD324	24109103	Cap, Chip	0.01 μ F	K 25V	CD532	24092538	Cap, Chip	1 μ F	Z 10V

LOCATION NUMBER	PART NUMBER	DESCRIPTION			LOCATION NUMBER	PART NUMBER	DESCRIPTION		
CF202	24109103	Cap, Chip	0.01 μ F	K 25V			- RESISTORS -		
CF203	24088088	Cap, Tantalum	47 μ F	M 20V	R409	24011101	Res, Chip	100 Ω	J 1/20W
CF204	24109103	Cap, Chip	0.01 μ F	K 25V	R410	24011332	Res, Chip	3.3k Ω	J 1/20W
CF205	24296685	Cap, Tantalum, Chip	6.8 μ F	M 35V	R411	24011332	Res, Chip	3.3k Ω	J 1/20W
CF206	24109103	Cap, Chip	0.01 μ F	K 25V	R412	24011339	Res, Chip	3.3 Ω	J 1/20W
CF207	24296685	Cap, Tantalum, Chip	6.8 μ F	M 35V	R413	24011339	Res, Chip	3.3 Ω	J 1/20W
CF208	24109103	Cap, Chip	0.01 μ F	K 25V	R415	24011101	Res, Chip	100 Ω	J 1/20W
CF209	24296685	Cap, Tantalum, Chip	6.8 μ F	M 35V	R416	24011681	Res, Chip	680 Ω	J 1/20W
CF210	24109103	Cap, Chip	0.01 μ F	K 25V	R417	24011101	Res, Chip	100 Ω	J 1/20W
CF211	24296685	Cap, Tantalum, Chip	6.8 μ F	M 35V	R418	24011681	Res, Chip	680 Ω	J 1/20W
CF212	24109103	Cap, Chip	0.01 μ F	K 25V	R421	24000445	Res, Chip Jumper	0 Ω	
CL001	24100104	Cap, Chip	0.1 μ F	Z 25V	R423	24000445	Res, Chip Jumper	0 Ω	
CL002	24100104	Cap, Chip	0.1 μ F	Z 25V	R424	24011100	Res, Chip	10 Ω	J 1/20W
CL003	24100104	Cap, Chip	0.1 μ F	Z 25V	R425	24011100	Res, Chip	10 Ω	J 1/20W
CL004	24088088	Cap, Tantalum	47 μ F	M 20V	R431	24000445	Res, Chip Jumper	0 Ω	
CL005	24100103	Cap, Chip	0.01 μ F	Z 50V	R509	24011101	Res, Chip	100 Ω	J 1/20W
CL006	24100103	Cap, Chip	0.01 μ F	Z 50V	R510	24011332	Res, Chip	3.3k Ω	J 1/20W
CL008	24100103	Cap, Chip	0.01 μ F	Z 50V	R511	24011332	Res, Chip	3.3k Ω	J 1/20W
CL009	24100104	Cap, Chip	0.1 μ F	Z 25V	R512	24011339	Res, Chip	3.3 Ω	J 1/20W
CL010	24105200	Cap, Chip	20pF	J 50V	R513	24011339	Res, Chip	3.3 Ω	J 1/20W
CL011	24105200	Cap, Chip	20pF	J 50V	R521	24000445	Res, Chip Jumper	0 Ω	
CL012	24100103	Cap, Chip	0.01 μ F	Z 50V	R523	24000445	Res, Chip Jumper	0 Ω	
CL013	24100103	Cap, Chip	0.01 μ F	Z 50V	R609	24011101	Res, Chip	100 Ω	J 1/20W
CL014	24105471	Cap, Chip	470pF	J 50V	R610	24011332	Res, Chip	3.3k Ω	J 1/20W
CL015	24100104	Cap, Chip	0.1 μ F	Z 25V	R611	24011332	Res, Chip	3.3k Ω	J 1/20W
CL016	24619103	Cap, Chip	4.7 μ F	M 25V	R612	24011339	Res, Chip	3.3 Ω	J 1/20W
CL017	24100104	Cap, Chip	0.1 μ F	Z 25V	R613	24011339	Res, Chip	3.3 Ω	J 1/20W
CL018	24100104	Cap, Chip	0.1 μ F	Z 25V	R621	24000445	Res, Chip Jumper	0 Ω	
CL019	24100103	Cap, Chip	0.01 μ F	Z 50V	R623	24000445	Res, Chip Jumper	0 Ω	
CL020	24100104	Cap, Chip	0.1 μ F	Z 25V	R624	24000445	Res, Chip Jumper	0 Ω	
CL021	24100104	Cap, Chip	0.1 μ F	Z 25V	R705	24011103	Res, Chip	10k Ω	J 1/20W
CL022	24105221	Cap, Chip	220pF	J 50V	R706	24011103	Res, Chip	10k Ω	J 1/20W
CL023	24100104	Cap, Chip	0.1 μ F	Z 25V	R709	24011332	Res, Chip	3.3k Ω	J 1/20W
CL024	24100103	Cap, Chip	0.01 μ F	Z 50V	R710	24011152	Res, Chip	1.5k Ω	J 1/20W
CL025	24100103	Cap, Chip	0.01 μ F	Z 50V	R711	24011152	Res, Chip	1.5k Ω	J 1/20W
CL026	24100103	Cap, Chip	0.01 μ F	Z 50V	R712	24011332	Res, Chip	3.3k Ω	J 1/20W
CL027	24105101	Cap, Chip	100pF	J 50V	R900	24011101	Res, Chip	100 Ω	J 1/20W
CL028	24105101	Cap, Chip	100pF	J 50V	R901	24011101	Res, Chip	100 Ω	J 1/20W
CL029	24105101	Cap, Chip	100pF	J 50V	R902	24011101	Res, Chip	100 Ω	J 1/20W
CL030	24105101	Cap, Chip	100pF	J 50V	R903	24011101	Res, Chip	100 Ω	J 1/20W
CL031	24105101	Cap, Chip	100pF	J 50V	R904	24011101	Res, Chip	100 Ω	J 1/20W
CL032	24105101	Cap, Chip	100pF	J 50V	R905	24011101	Res, Chip	100 Ω	J 1/20W
CL033	24105101	Cap, Chip	100pF	J 50V	R906	24011101	Res, Chip	100 Ω	J 1/20W
CL034	24105101	Cap, Chip	100pF	J 50V	R907	24011101	Res, Chip	100 Ω	J 1/20W
CL035	24100103	Cap, Chip	0.01 μ F	Z 50V	R908	24011103	Res, Chip	10k Ω	J 1/20W
CL036	24100103	Cap, Chip	0.01 μ F	Z 50V	R909	24011472	Res, Chip	4.7k Ω	J 1/20W
CL037	24100104	Cap, Chip	0.1 μ F	Z 25V	R911	24011472	Res, Chip	4.7k Ω	J 1/20W
CL038	24100103	Cap, Chip	0.01 μ F	Z 50V	R912	24011101	Res, Chip	100 Ω	J 1/20W
CL039	24100104	Cap, Chip	0.1 μ F	Z 25V	R913	24011101	Res, Chip	100 Ω	J 1/20W
CL040	24109152	Cap, Chip	1500pF	K 50V	R914	24011101	Res, Chip	100 Ω	J 1/20W
CL041	24100104	Cap, Chip	0.1 μ F	Z 25V	R915	24011103	Res, Chip	10k Ω	J 1/20W
CL042	24100103	Cap, Chip	0.01 μ F	Z 50V	R916	24011103	Res, Chip	10k Ω	J 1/20W
CL043	24092441	Cap, Chip	1 μ F	Z 16V	R917	24011101	Res, Chip	100 Ω	J 1/20W
CL044	24092441	Cap, Chip	1 μ F	Z 16V	R918	24011101	Res, Chip	100 Ω	J 1/20W
CL045	24092441	Cap, Chip	1 μ F	Z 16V	R919	24011101	Res, Chip	100 Ω	J 1/20W
CL046	24092441	Cap, Chip	1 μ F	Z 16V	R920	24011101	Res, Chip	100 Ω	J 1/20W
CL047	24092441	Cap, Chip	1 μ F	Z 16V	R925	24011330	Res, Chip	33 Ω	J 1/20W
CL049	24619102	Cap, Chip	47 μ F	M 16V	R926	24011330	Res, Chip	33 Ω	J 1/20W
CL050	24100104	Cap, Chip	0.1 μ F	Z 25V	R927	24011330	Res, Chip	33 Ω	J 1/20W
CL051	24109152	Cap, Chip	1500pF	K 50V	R928	24011330	Res, Chip	33 Ω	J 1/20W
CL052	24100104	Cap, Chip	0.1 μ F	Z 25V	R929	24011330	Res, Chip	33 Ω	J 1/20W
CL053	24092441	Cap, Chip	1 μ F	Z 16V	R930	24011330	Res, Chip	33 Ω	J 1/20W
CL054	24092441	Cap, Chip	1 μ F	Z 16V	R931	24011330	Res, Chip	33 Ω	J 1/20W
CL055	24092441	Cap, Chip	1 μ F	Z 16V	R932	24011330	Res, Chip	33 Ω	J 1/20W
CL056	24092441	Cap, Chip	1 μ F	Z 16V	R933	24011330	Res, Chip	33 Ω	J 1/20W
CL057	24092441	Cap, Chip	1 μ F	Z 16V	R934	24011330	Res, Chip	33 Ω	J 1/20W
CL058	24092441	Cap, Chip	1 μ F	Z 16V	R935	24011330	Res, Chip	33 Ω	J 1/20W
CL059	24092441	Cap, Chip	1 μ F	Z 16V	R936	24011330	Res, Chip	33 Ω	J 1/20W
CL060	24100104	Cap, Chip	0.1 μ F	Z 25V	R937	24011330	Res, Chip	33 Ω	J 1/20W
CL062	24619102	Cap, Chip	47 μ F	M 16V	R938	24011330	Res, Chip	33 Ω	J 1/20W
CL063	24100104	Cap, Chip	0.1 μ F	Z 25V	R939	24011330	Res, Chip	33 Ω	J 1/20W
CL064	24100104	Cap, Chip	0.1 μ F	Z 25V	R940	24011330	Res, Chip	33 Ω	J 1/20W
CL065	24100104	Cap, Chip	0.1 μ F	Z 25V	R941	24011330	Res, Chip	33 Ω	J 1/20W
CL066	24100104	Cap, Chip	0.1 μ F	Z 25V	R942	24011330	Res, Chip	33 Ω	J 1/20W
CL067	24092538	Cap, Chip	1 μ F	Z 10V	R943	24011330	Res, Chip	33 Ω	J 1/20W

LOCATION NUMBER	PART NUMBER	DESCRIPTION				LOCATION NUMBER	PART NUMBER	DESCRIPTION			
R950	24011302	Res, Chip	3kΩ	J	1/20W	RD306	24011750	Res, Chip	75Ω	J	1/20W
R951	24011102	Res, Chip	1kΩ	J	1/20W	RD307	24011102	Res, Chip	1kΩ	J	1/20W
R952	24011103	Res, Chip	10kΩ	J	1/20W	RD308	24011102	Res, Chip	1kΩ	J	1/20W
R953	24011152	Res, Chip	1.5kΩ	J	1/20W	RD309	24000571	Res, Chip	1.5kΩ	F	1/16W
R954	24011102	Res, Chip	1kΩ	J	1/20W	RD310	24019346	Res, Block	100Ωx4	J	1/16W
R961	24011152	Res, Chip	1.5kΩ	J	1/20W	RD311	24019346	Res, Block	100Ωx4	J	1/16W
R962	24011151	Res, Chip	150Ω	J	1/20W	RD312	24019346	Res, Block	100Ωx4	J	1/16W
R963	24011102	Res, Chip	1kΩ	J	1/20W	RD313	24019346	Res, Block	100Ωx4	J	1/16W
R964	24011104	Res, Chip	100kΩ	J	1/20W	RD314	24019346	Res, Block	100Ωx4	J	1/16W
*b R965	24000445	Res, Chip Jumper	0Ω			RD315	24019346	Res, Block	100Ωx4	J	1/16W
*a R966	24000445	Res, Chip Jumper	0Ω			RD316	24019346	Res, Block	100Ωx4	J	1/16W
*b R967	24000445	Res, Chip Jumper	0Ω			RD317	24019346	Res, Block	100Ωx4	J	1/16W
*a R968	24000445	Res, Chip Jumper	0Ω			RD318	24019346	Res, Block	100Ωx4	J	1/16W
*a R969	24000445	Res, Chip Jumper	0Ω			RD319	24019346	Res, Block	100Ωx4	J	1/16W
*b R970	24000445	Res, Chip Jumper	0Ω			RD320	24011105	Res, Chip	1MΩ	J	1/20W
R971	24011102	Res, Chip	1kΩ	J	1/20W	RD400	24011101	Res, Chip	100Ω	J	1/20W
R972	24011103	Res, Chip	10kΩ	J	1/20W	RD401	24011101	Res, Chip	100Ω	J	1/20W
R973	24011102	Res, Chip	1kΩ	J	1/20W	RD402	24011101	Res, Chip	100Ω	J	1/20W
R974	24011103	Res, Chip	10kΩ	J	1/20W	RD403	24011101	Res, Chip	100Ω	J	1/20W
R975	24011102	Res, Chip	1kΩ	J	1/20W	RD404	24011101	Res, Chip	100Ω	J	1/20W
R976	24011103	Res, Chip	10kΩ	J	1/20W	RD405	24011101	Res, Chip	100Ω	J	1/20W
R977	24011103	Res, Chip	10kΩ	J	1/20W	RD406	24011103	Res, Chip	10kΩ	J	1/20W
RD001	24011125	Res, Chip	1.2MΩ	J	1/20W	RD407	24011103	Res, Chip	10kΩ	J	1/20W
RD004	24011101	Res, Chip	100Ω	J	1/20W	RD408	24011103	Res, Chip	10kΩ	J	1/20W
RD005	24011101	Res, Chip	100Ω	J	1/20W	RD409	24011682	Res, Chip	6.8kΩ	J	1/20W
RD006	24011101	Res, Chip	100Ω	J	1/20W	RD410	24011222	Res, Chip	2.2kΩ	J	1/20W
RD007	24011101	Res, Chip	100Ω	J	1/20W	*a RD411	24011100	Res, Chip	10Ω	J	1/20W
RD008	24011101	Res, Chip	100Ω	J	1/20W	*a RD412	24011100	Res, Chip	10Ω	J	1/20W
RD009	24011470	Res, Chip	47Ω	J	1/20W	RD413	24011470	Res, Chip	47Ω	J	1/20W
RD010	24011470	Res, Chip	47Ω	J	1/20W	RD414	24011470	Res, Chip	47Ω	J	1/20W
RD011	24011470	Res, Chip	47Ω	J	1/20W	RD415	24011470	Res, Chip	47Ω	J	1/20W
RD012	24011470	Res, Chip	47Ω	J	1/20W	RD416	24011470	Res, Chip	47Ω	J	1/20W
RD013	24011470	Res, Chip	47Ω	J	1/20W	RD417	24011102	Res, Chip	1kΩ	J	1/20W
RD014	24000571	Res, Chip	1.5kΩ	F	1/16W	RD418	24011102	Res, Chip	1kΩ	J	1/20W
RD015	24000560	Res, Chip	910Ω	F	1/16W	RD419	24011470	Res, Chip	47Ω	J	1/20W
RD016	24000571	Res, Chip	1.5kΩ	F	1/16W	RD420	24011331	Res, Chip	330Ω	J	1/20W
RD017	24000560	Res, Chip	910Ω	F	1/16W	RD421	24011102	Res, Chip	1kΩ	J	1/20W
RD018	24000571	Res, Chip	1.5kΩ	F	1/16W	RD422	24011392	Res, Chip	3.9kΩ	J	1/20W
RD019	24000573	Res, Chip	1kΩ	F	1/16W	RD423	24011105	Res, Chip	1MΩ	J	1/20W
RD020	24000590	Res, Chip	3kΩ	F	1/16W	RD424	24011470	Res, Chip	47Ω	J	1/20W
RD021	24000573	Res, Chip	1kΩ	F	1/16W	RD425	24011470	Res, Chip	47Ω	J	1/20W
RD022	24000590	Res, Chip	3kΩ	F	1/16W	RD426	24011470	Res, Chip	47Ω	J	1/20W
RD023	24000573	Res, Chip	1kΩ	F	1/16W	RD431	24011101	Res, Chip	100Ω	J	1/20W
RD024	24000590	Res, Chip	3kΩ	F	1/16W	RD432	24011101	Res, Chip	100Ω	J	1/20W
RD025	24000573	Res, Chip	1kΩ	F	1/16W	*b RD433	24872100	Res, Chip	10Ω	J	1/16W
RD026	24011102	Res, Chip	1kΩ	J	1/20W	*b RD434	24872100	Res, Chip	10Ω	J	1/16W
RD027	24011102	Res, Chip	1kΩ	J	1/20W	RD435	24011470	Res, Chip	47Ω	J	1/20W
RD028	24011103	Res, Chip	10kΩ	J	1/20W	RD437	24011102	Res, Chip	1kΩ	J	1/20W
RD029	24011103	Res, Chip	10kΩ	J	1/20W	RD439	24011102	Res, Chip	1kΩ	J	1/20W
RD030	24011101	Res, Chip	100Ω	J	1/20W	RD440	24011102	Res, Chip	1kΩ	J	1/20W
RD031	24011103	Res, Chip	10kΩ	J	1/20W	RD441	24011102	Res, Chip	1kΩ	J	1/20W
RD102	24011330	Res, Chip	33Ω	J	1/20W	RD442	24011102	Res, Chip	1kΩ	J	1/20W
RD103	24011330	Res, Chip	33Ω	J	1/20W	RD443	24011102	Res, Chip	1kΩ	J	1/20W
RD105	24011102	Res, Chip	1kΩ	J	1/20W	RD444	24011470	Res, Chip	47Ω	J	1/20W
RD111	24011102	Res, Chip	1kΩ	J	1/20W	RD500	24011103	Res, Chip	10kΩ	J	1/20W
RD113	24011330	Res, Chip	33Ω	J	1/20W	RD501	24011103	Res, Chip	10kΩ	J	1/20W
RD114	24019346	Res, Block	100Ωx4	J	1/16W	RD502	24011102	Res, Chip	1kΩ	J	1/20W
RD115	24019346	Res, Block	100Ωx4	J	1/16W	RD503	24011101	Res, Chip	100Ω	J	1/20W
RD116	24019346	Res, Block	100Ωx4	J	1/16W	RD600	24019346	Res, Block	100Ωx4	J	1/16W
RD117	24019346	Res, Block	100Ωx4	J	1/16W	RD601	24019346	Res, Block	100Ωx4	J	1/16W
RD200	24011560	Res, Chip	56Ω	J	1/20W	RD602	24019346	Res, Block	100Ωx4	J	1/16W
RD201	24011560	Res, Chip	56Ω	J	1/20W	RD603	24019346	Res, Block	100Ωx4	J	1/16W
RD202	24011560	Res, Chip	56Ω	J	1/20W	RD604	24019346	Res, Block	100Ωx4	J	1/16W
RD203	24019346	Res, Block	100Ωx4	J	1/16W	RD605	24019346	Res, Block	100Ωx4	J	1/16W
RD204	24019346	Res, Block	100Ωx4	J	1/16W	RD606	24019346	Res, Block	100Ωx4	J	1/16W
RD208	24011470	Res, Chip	47Ω	J	1/20W	RD607	24011101	Res, Chip	100Ω	J	1/20W
RD213	24011180	Res, Chip	18Ω	J	1/20W	RD608	24011101	Res, Chip	100Ω	J	1/20W
RD214	24011180	Res, Chip	18Ω	J	1/20W	RD609	24011242	Res, Chip	2.4kΩ	J	1/20W
RD215	24011180	Res, Chip	18Ω	J	1/20W	RD610	24011101	Res, Chip	100Ω	J	1/20W
RD216	24011472	Res, Chip	4.7kΩ	J	1/20W	RD611	24011101	Res, Chip	100Ω	J	1/20W
RD301	24011470	Res, Chip	47Ω	J	1/20W	RD612	24011101	Res, Chip	100Ω	J	1/20W
RD302	24019346	Res, Block	100Ωx4	J	1/16W	RD613	24011242	Res, Chip	2.4kΩ	J	1/20W
RD303	24019346	Res, Block	100Ωx4	J	1/16W	RD614	24011242	Res, Chip	2.4kΩ	J	1/20W
RD304	24011750	Res, Chip	75Ω	J	1/20W	RD615	24000572	Res, Chip	3.3Ω	F	1/16W
RD305	24011750	Res, Chip	75Ω	J	1/20W	RD616	24000422	Res, Chip	2.2kΩ	F	1/16W

(Note)

*a: TLP450, TLP451

*b: TLP650, TLP651

LOCATION NUMBER	PART NUMBER	DESCRIPTION							
RF001	24872335	Res, Chip	3.3M Ω	J 1/16W					
RF002	24000597	Res, Chip	20k Ω	F 1/16W					
RF003	24000597	Res, Chip	20k Ω	F 1/16W					
RF004	24000594	Res, Chip	12k Ω	F 1/16W					
RF005	24000605	Res, Chip	6.8k Ω	F 1/16W					
RF006	24019427	Thermister	NTM4G42B104E01						
RF007	24000488	Res, Chip	3.9 Ω	J 1/2W					
RF008	24011152	Res, Chip	1.5k Ω	J 1/20W					
RF009	24872335	Res, Chip	3.3M Ω	J 1/16W					
RF010	24000595	Res, Chip	15k Ω	F 1/16W					
RF011	24000596	Res, Chip	18k Ω	F 1/16W					
RF012	24000593	Res, Chip	10k Ω	F 1/16W					
RF013	24872101	Res, Chip	100 Ω	J 1/16W					
RF014	24019427	Thermister	NTM4G42B104E01						
RF016	24000488	Res, Chip	3.9 Ω	J 1/2W					
RF017	24011152	Res, Chip	1.5k Ω	J 1/20W					
RF021	24019007	Res, Chip	100 Ω	J 1W					
RF022	24019007	Res, Chip	100 Ω	J 1W					
RF023	24000570	Res, Chip	470 Ω	F 1/16W					
RF024	24000573	Res, Chip	1k Ω	F 1/16W					
RF025	24872472	Res, Chip	4.7k Ω	J 1/16W					
RF050	24000445	Res, Chip Jumper	0 Ω						
RF052	24000445	Res, Chip Jumper	0 Ω						
RF201	24000590	Res, Chip	3k Ω	F 1/16W					
RF202	24000573	Res, Chip	1k Ω	F 1/16W					
RF203	24000606	Res, Chip	8.2k Ω	F 1/16W					
RF204	24000571	Res, Chip	1.5k Ω	F 1/16W					
RF205	24000573	Res, Chip	1k Ω	F 1/16W					
RF206	24000605	Res, Chip	6.8k Ω	F 1/16W					
RF207	24000573	Res, Chip	1k Ω	F 1/16W					
RF208	24000573	Res, Chip	1k Ω	F 1/16W					
RL001	24000564	Res, Block	10k Ω x4	J 1/16W					
RL002	24011103	Res, Chip	10k Ω	J 1/20W					
RL003	24011103	Res, Chip	10k Ω	J 1/20W					
RL004	24000564	Res, Block	10k Ω x4	J 1/16W					
RL005	24011103	Res, Chip	10k Ω	J 1/20W					
RL006	24011101	Res, Chip	100 Ω	J 1/20W					
RL007	24011472	Res, Chip	4.7k Ω	J 1/20W					
RL008	24011472	Res, Chip	4.7k Ω	J 1/20W					
RL009	24011103	Res, Chip	10k Ω	J 1/20W					
RL010	24011102	Res, Chip	1k Ω	J 1/20W					
RL011	24000564	Res, Block	10k Ω x4	J 1/16W					
RL012	24011471	Res, Chip	470 Ω	J 1/20W					
RL013	24011471	Res, Chip	470 Ω	J 1/20W					
RL014	24011471	Res, Chip	470 Ω	J 1/20W					
RL015	24011471	Res, Chip	470 Ω	J 1/20W					
RL016	24011471	Res, Chip	470 Ω	J 1/20W					
RL017	24011471	Res, Chip	470 Ω	J 1/20W					
RL018	24011471	Res, Chip	470 Ω	J 1/20W					
RL019	24011471	Res, Chip	470 Ω	J 1/20W					
RL020	24019346	Res, Block	100 Ω x4	J 1/16W					
RL021	24019346	Res, Block	100 Ω x4	J 1/16W					
RL022	24019346	Res, Block	100 Ω x4	J 1/16W					
RL023	24019346	Res, Block	100 Ω x4	J 1/16W					
RL024	24019346	Res, Block	100 Ω x4	J 1/16W					
RL025	24019346	Res, Block	100 Ω x4	J 1/16W					
RL026	24019346	Res, Block	100 Ω x4	J 1/16W					
RL027	24019346	Res, Block	100 Ω x4	J 1/16W					
RL029	24019346	Res, Block	100 Ω x4	J 1/16W					
RL030	24019346	Res, Block	100 Ω x4	J 1/16W					
RL031	24019346	Res, Block	100 Ω x4	J 1/16W					
RL032	24019346	Res, Block	100 Ω x4	J 1/16W					
RL033	24019346	Res, Block	100 Ω x4	J 1/16W					
RL034	24019346	Res, Block	100 Ω x4	J 1/16W					
RL035	24019346	Res, Block	100 Ω x4	J 1/16W					
RL036	24019346	Res, Block	100 Ω x4	J 1/16W					
RL037	24019346	Res, Block	100 Ω x4	J 1/16W					
RL038	24019346	Res, Block	100 Ω x4	J 1/16W					
RL040	24019346	Res, Block	100 Ω x4	J 1/16W					
RL041	24019346	Res, Block	100 Ω x4	J 1/16W					
RL042	24019346	Res, Block	100 Ω x4	J 1/16W					
RL043	24019346	Res, Block	100 Ω x4	J 1/16W					
RL044	24019346	Res, Block	100 Ω x4	J 1/16W					
RL045	24019346	Res, Block	100 Ω x4	J 1/16W					
RL046	24019346	Res, Block	100 Ω x4	J 1/16W					
RL047	24019346	Res, Block	100 Ω x4	J 1/16W					
RL048	24019346	Res, Block	100 Ω x4	J 1/16W					
RL049	24019346	Res, Block	100 Ω x4	J 1/16W					
RL050	24019346	Res, Block	100 Ω x4	J 1/16W					
RL051	24011302	Res, Chip	3k Ω	J 1/20W					
RL052	24011201	Res, Chip	200 Ω	J 1/20W					
RL053	24011201	Res, Chip	200 Ω	J 1/20W					
RL054	24011123	Res, Chip	12k Ω	J 1/20W					
RL055	24011103	Res, Chip	10k Ω	J 1/20W					
RL056	24011103	Res, Chip	10k Ω	J 1/20W					
RL057	24011473	Res, Chip	47k Ω	J 1/20W					
RL058	24011103	Res, Chip	10k Ω	J 1/20W					
RL059	24011101	Res, Chip	100 Ω	J 1/20W					
RL060	24011681	Res, Chip	680 Ω	J 1/20W					
RL061	24011103	Res, Chip	10k Ω	J 1/20W					
RL062	24011103	Res, Chip	10k Ω	J 1/20W					
RL063	24011123	Res, Chip	12k Ω	J 1/20W					
RL064	24011123	Res, Chip	12k Ω	J 1/20W					
RL065	24011123	Res, Chip	12k Ω	J 1/20W					
RL066	24011472	Res, Chip	4.7k Ω	J 1/20W					
RL067	24011103	Res, Chip	10k Ω	J 1/20W					
RL070	24011103	Res, Chip	10k Ω	J 1/20W					
RL073	24011103	Res, Chip	10k Ω	J 1/20W					
RL076	24011101	Res, Chip	100 Ω	J 1/20W					
RL077	24011473	Res, Chip	47k Ω	J 1/20W					
RL078	24011103	Res, Chip	10k Ω	J 1/20W					
RL080	24011103	Res, Chip	10k Ω	J 1/20W					
RL084	24011104	Res, Chip	100k Ω	J 1/20W					
RL085	24011472	Res, Chip	4.7k Ω	J 1/20W					
RL086	24000564	Res, Block	10k Ω x4	J 1/16W					
RL087	24011103	Res, Chip	10k Ω	J 1/20W					
RL088	24000564	Res, Block	10k Ω x4	J 1/16W					
RL090	24011103	Res, Chip	10k Ω	J 1/20W					
RL091	24011103	Res, Chip	10k Ω	J 1/20W					
RL092	24011103	Res, Chip	10k Ω	J 1/20W					
RL093	24011103	Res, Chip	10k Ω	J 1/20W					
RL094	24011473	Res, Chip	47k Ω	J 1/20W					
RL095	24011473	Res, Chip	47k Ω	J 1/20W					
RL096	24019346	Res, Block	100 Ω x4	J 1/16W					
RL097	24011104	Res, Chip	100k Ω	J 1/20W					
RL098	24011472	Res, Chip	4.7k Ω	J 1/20W					
RL099	24011101	Res, Chip	100 Ω	J 1/20W					
RL100	24011103	Res, Chip	10k Ω	J 1/20W					
RL101	24011104	Res, Chip	100k Ω	J 1/20W					
RL102	24011103	Res, Chip	10k Ω	J 1/20W					
RL103	24011103	Res, Chip	10k Ω	J 1/20W					
RL105	24019346	Res, Block	100 Ω x4	J 1/16W					
RL106	24011473	Res, Chip	47k Ω	J 1/20W					
RL107	24011473	Res, Chip	47k Ω	J 1/20W					
RL108	24011101	Res, Chip	100 Ω	J 1/20W					
RL109	24011681	Res, Chip	680 Ω	J 1/20W					
RL110	24011472	Res, Chip	4.7k Ω	J 1/20W					
RL111	24011472	Res, Chip	4.7k Ω	J 1/20W					

LOCATION NUMBER	PART NUMBER	DESCRIPTION		LOCATION NUMBER	PART NUMBER	DESCRIPTION	
RF06B	23960136	Bond		DB004	A7152750	Diode, Chip	1SS226
SL001	70145452	Switch	Tact	DB005	A7152750	Diode, Chip	1SS226
SL002	70145452	Switch	Tact	DB006	A7152750	Diode, Chip	1SS226
SL003	70145452	Switch	Tact	DB007	A7152750	Diode, Chip	1SS226
SL004	70145452	Switch	Tact	DB008	A7152750	Diode, Chip	1SS226
SL005	70145452	Switch	Tact	DB009	23357168	Diode, Zener	UDZSTE176. 2B
SL006	70145452	Switch	Tact	DB010	23357168	Diode, Zener	UDZSTE176. 2B
SL007	70145452	Switch	Tact	DB011	23357172	Diode, Zener	UDZSTE1710B
SL008	70145452	Switch	Tact	DB012	23357172	Diode, Zener	UDZSTE1710B
SL009	70145452	Switch	Tact	DB013	23357168	Diode, Zener	UDZSTE176. 2B
XL001	23153776	Crystal		DB014	23357168	Diode, Zener	UDZSTE176. 2B
Z704	23103823	Filter	TEM2027D	DB021	23357172	Diode, Zener	UDZSTE1710B
ZD001	23103823	Filter	TEM2027D	DB022	23357172	Diode, Zener	UDZSTE1710B
ZD002	23103823	Filter	TEM2027D	DB023	23357172	Diode, Zener	UDZSTE1710B
ZD003	23103823	Filter	TEM2027D	DB024	23357172	Diode, Zener	UDZSTE1710B
ZD004	23355936	Oscillator	SG82C80M	DB025	23357172	Diode, Zener	UDZSTE1710B
ZD005	23103013	Filter	TEM2020T	DB026	23357172	Diode, Zener	UDZSTE1710B
ZD006	23103013	Filter	TEM2020T	DB027	23357172	Diode, Zener	UDZSTE1710B
ZD100	23103013	Filter	TEM2020T	DB028	23357172	Diode, Zener	UDZSTE1710B
ZD101	23103013	Filter	TEM2020T	DB029	23357172	Diode, Zener	UDZSTE1710B
ZD103	23103013	Filter	TEM2020T			- COILS -	
ZD104	23103823	Filter	TEM2027D	LB001	70132467	Filter	SC200KT
ZD200	23103013	Filter	TEM2020T	LB002	70132467	Filter	SC200KT
ZD201	23103013	Filter	TEM2020T	LB003	70132467	Filter	SC200KT
ZD202	23103013	Filter	TEM2020T	LB004	70132468	Filter	SC800KT
ZD203	23103823	Filter	TEM2027D	LB005	70132468	Filter	SC800KT
ZD204	23153517	Crystal	CK-51F	LB006	70132467	Filter	SC200KT
ZD205	23103823	Filter	TEM2027D	LB007	70132467	Filter	SC200KT
ZD300	23103013	Filter	TEM2020T	LB008	70132467	Filter	SC200KT
ZD301	23103013	Filter	TEM2020T	LB009	70132468	Filter	SC800KT
ZD302	23103013	Filter	TEM2020T	LB010	70132468	Filter	SC800KT
ZD303	23103823	Filter	TEM2027D	LB011	70132468	Filter	SC800KT
ZD400	23103823	Filter	TEM2027D	LB012	70132468	Filter	SC800KT
ZD401	23103823	Filter	TEM2027D	LB013	70132468	Filter	SC800KT
ZD402	23103823	Filter	TEM2027D	LB014	23303119	Filter	TEM1043
ZD403	23103823	Filter	TEM2027D	LB015	23303119	Filter	TEM1043
ZD404	23103823	Filter	TEM2027D	LB016	23303119	Filter	TEM1043
ZD600	23103823	Filter	TEM2027D	LB017	23303119	Filter	TEM1043
ZD601	23103013	Filter	TEM2020T	LB018	23103795	Coil, Chip	MMZ2012S301A
ZD602	23103013	Filter	TEM2020T	LB019	23103795	Coil, Chip	MMZ2012S301A
ZD603	23103013	Filter	TEM2020T	LB020	23103795	Coil, Chip	MMZ2012S301A
				LB021	23103795	Coil, Chip	MMZ2012S301A
				LB022	23103795	Coil, Chip	MMZ2012S301A
■U0021	23783704	P C Board Assy	RGB			- CAPACITORS -	
		- INTEGRATED CIRCUITS -		CB001	24109102	Cap, Chip	1000pF K 50V
QB001	23906662	IC	MAX4158ESA	CB002	24100104	Cap, Chip	0.1μF Z 25V
QB002	23906662	IC	MAX4158ESA	CB003	24109102	Cap, Chip	1000pF K 50V
QB003	23906662	IC	MAX4158ESA	CB004	24100104	Cap, Chip	0.1μF Z 25V
QB004	23906663	IC	LT1260CS	CB005	24109102	Cap, Chip	1000pF K 50V
QB005	23906216	IC	MAX497CSE	CB006	24100104	Cap, Chip	0.1μF Z 25V
QB006	B0489227	IC	TC74ACT244F	CB010	24109102	Cap, Chip	1000pF K 50V
QB007	23000957	IC	EL4332CS-ET	CB011	24109102	Cap, Chip	1000pF K 50V
QB008	23906665	IC	MAX499CWG	CB012	24109102	Cap, Chip	1000pF K 50V
QB016	23906214	IC	M52347FP	CB013	24100104	Cap, Chip	0.1μF Z 25V
QB017	23906234	IC	M62320FP	CB014	24100104	Cap, Chip	0.1μF Z 25V
QB022	70129738	IC	PQ20VZ1U	CB015	24100104	Cap, Chip	0.1μF Z 25V
QB023	23906212	IC	LM2991SX	CB016	24088951	Cap, Chip	6.8μF M 16V
QB026	B0488995	IC	TC74AC157F	CB017	24088951	Cap, Chip	6.8μF M 16V
QB027	A6030630	IC	TC7S08F	CB018	24100104	Cap, Chip	0.1μF Z 25V
QB028	A6030630	IC	TC7S08F	CB019	24100104	Cap, Chip	0.1μF Z 25V
		- TRANSISTORS -		CB020	24100104	Cap, Chip	0.1μF Z 25V
QB009	23314202	Transistor, Chip	2SA1037K	CB021	24100104	Cap, Chip	0.1μF Z 25V
QB010	23314204	Transistor, Chip	2SC2412K	CB022	24088951	Cap, Chip	6.8μF M 16V
QB011	23314202	Transistor, Chip	2SA1037K	CB023	24100104	Cap, Chip	0.1μF Z 25V
QB012	23314204	Transistor, Chip	2SC2412K	CB024	24100104	Cap, Chip	0.1μF Z 25V
QB013	23314202	Transistor, Chip	2SA1037K	CB025	24088951	Cap, Chip	6.8μF M 16V
QB014	23314204	Transistor, Chip	2SC2412K	CB026	24088951	Cap, Chip	6.8μF M 16V
QB015	23314204	Transistor, Chip	2SC2412K	CB027	24105220	Cap, Chip	22μF J 50V
QB018	A6549570	Transistor, Chip	2SA1586-Y	CB028	24105220	Cap, Chip	22μF J 50V
QB019	A6549570	Transistor, Chip	2SA1586-Y	CB029	24105220	Cap, Chip	22μF J 50V
QB020	A6335470	Transistor, Chip	2SC2712-Y	CB030	24109102	Cap, Chip	1000pF K 50V
QB021	A6335470	Transistor, Chip	2SC2712-Y	CB031	24109102	Cap, Chip	1000pF K 50V
		- DIODES -		CB032	24100104	Cap, Chip	0.1μF Z 25V
DB001	23357168	Diode, Zener	UDZSTE176. 2B	CB033	24100104	Cap, Chip	0.1μF Z 25V
DB002	23357168	Diode, Zener	UDZSTE176. 2B	CB034	24109102	Cap, Chip	1000pF K 50V
DB003	A7152750	Diode, Chip	1SS226				

LOCATION NUMBER	PART NUMBER	DESCRIPTION		LOCATION NUMBER	PART NUMBER	DESCRIPTION	
CB035	24109102	Cap, Chip	1000pF	K 50V	RB037	24872103	Res, Chip
CB036	24100104	Cap, Chip	0.1 μ F	Z 25V	RB038	24872103	Res, Chip
CB037	24100104	Cap, Chip	0.1 μ F	Z 25V	RB039	24872104	Res, Chip
CB038	24619103	Cap, Chip	4.7 μ F	M 25V	RB040	24872104	Res, Chip
CB039	24619103	Cap, Chip	4.7 μ F	M 25V	RB041	24872101	Res, Chip
CB040	24619103	Cap, Chip	4.7 μ F	M 25V	RB042	24872101	Res, Chip
CB041	24619113	Cap, Chip	1 μ F	M 50V	RB043	24872221	Res, Chip
CB042	24619100	Cap, Chip	10 μ F	M 16V	RB044	24872221	Res, Chip
CB043	24105221	Cap, Chip	220pF	J 50V	RB045	24011390	Res, Chip
CB044	24109103	Cap, Chip	0.01 μ F	K 25V	RB046	24011390	Res, Chip
CB045	24088951	Cap, Chip	6.8 μ F	M 16V	RB047	24011390	Res, Chip
CB046	24105101	Cap, Chip	100pF	J 50V	RB048	24000426	Res, Chip
CB047	24092441	Cap, Chip	1 μ F	Z 16V	RB049	24000426	Res, Chip
CB048	24092441	Cap, Chip	1 μ F	Z 16V	RB050	24000426	Res, Chip
CB049	24088951	Cap, Chip	6.8 μ F	M 16V	RB051	24000426	Res, Chip
CB050	24088951	Cap, Chip	6.8 μ F	M 16V	RB052	24000426	Res, Chip
CB051	24092441	Cap, Chip	1 μ F	Z 16V	RB053	24000426	Res, Chip
CB052	24092441	Cap, Chip	1 μ F	Z 16V	RB054	24011220	Res, Chip
CB053	24100104	Cap, Chip	0.1 μ F	Z 25V	RB055	24011220	Res, Chip
CB054	24100104	Cap, Chip	0.1 μ F	Z 25V	RB056	24011220	Res, Chip
CB055	24619100	Cap, Chip	10 μ F	M 16V	RB057	24011750	Res, Chip
CB056	24100104	Cap, Chip	0.1 μ F	Z 25V	RB058	24011750	Res, Chip
CB057	24619100	Cap, Chip	10 μ F	M 16V	RB059	24011750	Res, Chip
CB058	24100104	Cap, Chip	0.1 μ F	Z 25V	RB063	24011101	Res, Chip
CB059	24619102	Cap, Chip	47 μ F	M 16V	RB064	24872820	Res, Chip
CB060	24088953	Cap, Chip	33 μ F	M 16V	RB065	24011103	Res, Chip
CB061	24619102	Cap, Chip	47 μ F	M 16V	RB066	24011220	Res, Chip
CB062	24088953	Cap, Chip	33 μ F	M 16V	RB067	24011103	Res, Chip
CB066	24092441	Cap, Chip	1 μ F	Z 16V	RB068	24011220	Res, Chip
CB067	24092441	Cap, Chip	1 μ F	Z 16V	RB069	24011103	Res, Chip
CB068	24092441	Cap, Chip	1 μ F	Z 16V	RB070	24011220	Res, Chip
CB069	24092441	Cap, Chip	1 μ F	Z 16V	RB071	24011103	Res, Chip
CB070	24092441	Cap, Chip	1 μ F	Z 16V	RB072	24011220	Res, Chip
CB071	24092441	Cap, Chip	1 μ F	Z 16V	RB073	24872820	Res, Chip
CB072	24088978	Cap, Chip	22 μ F	M 20V	RB074	24872820	Res, Chip
CB073	24088978	Cap, Chip	22 μ F	M 20V	RB075	24011220	Res, Chip
CB074	24092441	Cap, Chip	1 μ F	Z 16V	RB076	24011220	Res, Chip
CB075	24092441	Cap, Chip	1 μ F	Z 16V	RB077	24011103	Res, Chip
- RESISTORS -				RB078	24011103	Res, Chip	10k Ω
RB001	24871750	Res, Chip	75 Ω	J 1/8W	RB079	24011220	Res, Chip
RB002	24871750	Res, Chip	75 Ω	J 1/8W	RB080	24011222	Res, Chip
RB003	24871750	Res, Chip	75 Ω	J 1/8W	RB081	24011220	Res, Chip
RB004	24872103	Res, Chip	10k Ω	J 1/16W	RB082	24011222	Res, Chip
RB005	24872103	Res, Chip	10k Ω	J 1/16W	RB083	24011820	Res, Chip
RB006	24011680	Res, Chip	68 Ω	J 1/20W	RB084	24011222	Res, Chip
RB007	24011750	Res, Chip	75 Ω	J 1/20W	RB085	24011220	Res, Chip
RB008	24011103	Res, Chip	10k Ω	J 1/20W	RB086	24872750	Res, Chip
RB009	24011680	Res, Chip	68 Ω	J 1/20W	RB087	24011220	Res, Chip
RB010	24011750	Res, Chip	75 Ω	J 1/20W	RB088	24872750	Res, Chip
RB011	24011103	Res, Chip	10k Ω	J 1/20W	RB089	24011220	Res, Chip
RB012	24011680	Res, Chip	68 Ω	J 1/20W	RB090	24872750	Res, Chip
RB013	24011750	Res, Chip	75 Ω	J 1/20W	RB091	24011101	Res, Chip
RB014	24011103	Res, Chip	10k Ω	J 1/20W	RB092	24872750	Res, Chip
RB015	24011560	Res, Chip	56 Ω	J 1/20W	RB093	24872750	Res, Chip
RB016	24000450	Res, Chip	100 Ω	F 1/16W	RB094	24872750	Res, Chip
RB017	24000461	Res, Chip	330 Ω	F 1/16W	RB095	24872821	Res, Chip
RB018	24011560	Res, Chip	56 Ω	J 1/20W	RB096	24011220	Res, Chip
RB019	24000450	Res, Chip	100 Ω	F 1/16W	RB097	24872681	Res, Chip
RB020	24000461	Res, Chip	330 Ω	F 1/16W	RB098	24011470	Res, Chip
RB021	24011560	Res, Chip	56 Ω	J 1/20W	RB099	24011103	Res, Chip
RB022	24000450	Res, Chip	100 Ω	F 1/16W	RB100	24872821	Res, Chip
RB023	24000461	Res, Chip	330 Ω	F 1/16W	RB101	24011220	Res, Chip
RB024	24011220	Res, Chip	22 Ω	J 1/20W	RB102	24872681	Res, Chip
RB025	24011222	Res, Chip	2.2k Ω	J 1/20W	RB103	24011470	Res, Chip
RB026	24011220	Res, Chip	22 Ω	J 1/20W	RB104	24011103	Res, Chip
RB027	24011222	Res, Chip	2.2k Ω	J 1/20W	RB105	24872821	Res, Chip
RB028	24011220	Res, Chip	22 Ω	J 1/20W	RB106	24011220	Res, Chip
RB029	24011222	Res, Chip	2.2k Ω	J 1/20W	RB107	24872681	Res, Chip
RB030	24011220	Res, Chip	22 Ω	J 1/20W	RB108	24011470	Res, Chip
RB031	24011222	Res, Chip	2.2k Ω	J 1/20W	RB109	24011103	Res, Chip
RB032	24872750	Res, Chip	75 Ω	J 1/16W	RB110	24011100	Res, Chip
RB033	24872750	Res, Chip	75 Ω	J 1/16W	RB111	24011100	Res, Chip
RB034	24872750	Res, Chip	75 Ω	J 1/16W	RB112	24011100	Res, Chip
RB035	24872750	Res, Chip	75 Ω	J 1/16W	RB113	24872750	Res, Chip
RB036	24872103	Res, Chip	10k Ω	J 1/16W	RB114	24011331	Res, Chip
							10k Ω
							J 1/16W
							10k Ω
							J 1/16W
							100k Ω
							J 1/16W
							100k Ω
							J 1/16W
							100 Ω
							J 1/16W
							100 Ω
							J 1/16W
							220 Ω
							J 1/16W
							39 Ω
							J 1/20W
							39 Ω
							J 1/20W
							39 Ω
							J 1/20W
							1.1 Ω
							F 1/16W
							1.1 Ω
							F 1/16W
							1.1 Ω
							F 1/16W
							1.1 Ω
							F 1/16W
							22 Ω
							J 1/20W
							22 Ω
							J 1/20W
							22 Ω
							J 1/20W
							75 Ω
							J 1/20W
							75 Ω
							J 1/20W
							100 Ω
							J 1/20W
							82 Ω
							J 1/16W
							10k Ω
							J 1/20W
							22 Ω
							J 1/20W
							10k Ω
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							22 Ω
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							10k Ω
							J 1/20W
							22 Ω
							J 1/20W
							10k Ω
							J 1/20W
							10 Ω
							J 1/20W
							10 Ω
							J 1/20W
							75 Ω
							J 1/16W
							330 Ω
							J 1/20W

LOCATION NUMBER	PART NUMBER	DESCRIPTION			LOCATION NUMBER	PART NUMBER	DESCRIPTION		
RB115	24872560	Res, Chip	56Ω	J 1/16W	PB006	23903049	Socket	FPC/FFC	
RB116	24872331	Res, Chip	330Ω	J 1/16W	U0022	23783705	P C Board Assy	Input	
RB117	24872560	Res, Chip	56Ω	J 1/16W			- INTEGRATED CIRCUITS -		
RB118	24011104	Res, Chip	100kΩ	J 1/20W	QA01	70128490	IC	MM1031M	
RB119	24011101	Res, Chip	100Ω	J 1/20W	QA02	70128503	IC	MM1041XMR	
RB120	24872821	Res, Chip	820Ω	J 1/16W	QA03	70128490	IC	MM1031M	
RB121	24011220	Res, Chip	22Ω	J 1/20W	QA06	23905590	IC	M52055FP	
RB122	24000419	Res, Chip	4.3kΩ	F 1/16W	QA09	23000958	IC	M62420FP-T	
RB123	24011101	Res, Chip	100Ω	J 1/20W	QA10	23906399	IC	LA4425A	
RB124	24011101	Res, Chip	100Ω	J 1/20W	QA11	A6030630	IC	TC7S08F	
RB125	24000405	Res, Chip	62kΩ	F 1/16W	QA12	A6030630	IC	TC7S08F	
RB126	24011472	Res, Chip	4.7kΩ	J 1/20W	QA13	23906234	IC	M62320FP	
RB127	24011472	Res, Chip	4.7kΩ	J 1/20W	QA20	70129738	IC	PQ20V21U	
RB128	24011472	Res, Chip	4.7kΩ	J 1/20W	QA21	70129738	IC	PQ20V21U	
RB129	24011472	Res, Chip	4.7kΩ	J 1/20W	QA22	70129738	IC	PQ20V21U	
RB130	24011101	Res, Chip	100Ω	J 1/20W	QA23	A6030630	IC	TC7S08F	
RB131	24011101	Res, Chip	100Ω	J 1/20W			- TRANSISTORS -		
RB132	24011101	Res, Chip	100Ω	J 1/20W	QA04	A6365620	Transistor, Chip	2SC4116-Y	
RB133	24011101	Res, Chip	100Ω	J 1/20W	QA05	A6365620	Transistor, Chip	2SC4116-Y	
RB134	24011101	Res, Chip	100Ω	J 1/20W	QA07	A6549570	Transistor, Chip	2SA1586-Y	
RB135	24011101	Res, Chip	100Ω	J 1/20W	QA08	A6549570	Transistor, Chip	2SA1586-Y	
RB136	24011101	Res, Chip	100Ω	J 1/20W	QA14	23314202	Transistor, Chip	2SA1037K	
RB137	24011101	Res, Chip	100Ω	J 1/20W	QA15	23314202	Transistor, Chip	2SA1037K	
RB138	24011101	Res, Chip	100Ω	J 1/20W	QA16	23314202	Transistor, Chip	2SA1037K	
RB139	24011101	Res, Chip	100Ω	J 1/20W			- DIODES -		
RB140	24011101	Res, Chip	100Ω	J 1/20W	DA01	23357172	Diode, Zener	UDZSTE1710B	
RB141	24011101	Res, Chip	100Ω	J 1/20W	DA02	23357172	Diode, Zener	UDZSTE1710B	
RB142	24011101	Res, Chip	100Ω	J 1/20W	DA03	23357172	Diode, Zener	UDZSTE1710B	
RB143	24011101	Res, Chip	100Ω	J 1/20W	DA04	23357172	Diode, Zener	UDZSTE1710B	
RB144	24011101	Res, Chip	100Ω	J 1/20W	DA05	23357172	Diode, Zener	UDZSTE1710B	
RB146	24011101	Res, Chip	100Ω	J 1/20W	DA06	23357168	Diode, Zener	UDZSTE176. 2B	
RB147	24011101	Res, Chip	100Ω	J 1/20W	DA08	23357168	Diode, Zener	UDZSTE176. 2B	
RB149	24011101	Res, Chip	100Ω	J 1/20W	DA09	23357168	Diode, Zener	UDZSTE176. 2B	
RB150	24011103	Res, Chip	10kΩ	J 1/20W			- COILS -		
RB151	24872473	Res, Chip	47kΩ	J 1/16W	LA01	23245839	Coil, Chip	TRF4560CB	
RB152	24872223	Res, Chip	22kΩ	J 1/16W	LA02	23245847	Coil, Chip	TRF4330CC	
RB153	24872223	Res, Chip	22kΩ	J 1/16W	LA03	23245847	Coil, Chip	TRF4330CC	
RB154	24872101	Res, Chip	100Ω	J 1/16W	LA04	23245847	Coil, Chip	TRF4330CC	
RB155	24872182	Res, Chip	1.8kΩ	J 1/16W	LA05	70132468	Filter	SC800KT	
RB156	24872101	Res, Chip	100Ω	J 1/16W	LA06	70132468	Filter	SC800KT	
RB157	24872473	Res, Chip	47kΩ	J 1/16W	LA07	70132468	Filter	SC800KT	
RB158	24872223	Res, Chip	22kΩ	J 1/16W	LA08	70132468	Filter	SC800KT	
RB159	24872101	Res, Chip	100Ω	J 1/16W	LA09	70132468	Filter	SC800KT	
RB160	24872223	Res, Chip	22kΩ	J 1/16W	LA10	23245847	Coil, Chip	TRF4330CC	
RB161	24872182	Res, Chip	1.8kΩ	J 1/16W	LA11	23303119	Filter	TEM1043	
RB162	24872101	Res, Chip	100Ω	J 1/16W	LA12	23303119	Filter	TEM1043	
RB163	24872102	Res, Chip	1kΩ	J 1/16W			- CAPACITORS -		
RB164	24872104	Res, Chip	100kΩ	J 1/16W	CA01	24619102	Cap, Chip	47μF	M 16V
RB165	24872182	Res, Chip	1.8kΩ	J 1/16W	CA02	24100104	Cap, Chip	0.1μF	Z 25V
RB166	24872101	Res, Chip	100Ω	J 1/16W	CA03	24619113	Cap, Chip	1μF	M 50V
RB167	24872102	Res, Chip	1kΩ	J 1/16W	CA04	24619102	Cap, Chip	47μF	M 16V
RB168	24872104	Res, Chip	100kΩ	J 1/16W	CA05	24092441	Cap, Chip	1μF	Z 16V
RB169	24872182	Res, Chip	1.8kΩ	J 1/16W	CA06	24092441	Cap, Chip	1μF	Z 16V
RB170	24872101	Res, Chip	100Ω	J 1/16W	CA07	24619102	Cap, Chip	47μF	M 16V
RB171	24000590	Res, Chip	3kΩ	F 1/16W	CA08	24088079	Cap, Chip	10μF	M 10V
RB172	24000573	Res, Chip	1kΩ	F 1/16W	CA09	24088079	Cap, Chip	10μF	M 10V
RB173	24000558	Res, Chip	750Ω	F 1/16W	CA10	24088079	Cap, Chip	10μF	M 10V
RB174	24000458	Res, Chip	240Ω	F 1/16W	CA11	24100104	Cap, Chip	0.1μF	Z 25V
RB175	24011101	Res, Chip	100Ω	J 1/20W	CA12	24619100	Cap, Chip	10μF	M 16V
RB201	24011104	Res, Chip	100kΩ	J 1/20W	CA13	24100104	Cap, Chip	0.1μF	Z 25V
RB202	24011470	Res, Chip	47Ω	J 1/20W	CA14	24619100	Cap, Chip	10μF	M 16V
RB203	24011104	Res, Chip	100kΩ	J 1/20W	CA15	24619100	Cap, Chip	10μF	M 16V
RB204	24011470	Res, Chip	47Ω	J 1/20W	CA16	24619100	Cap, Chip	10μF	M 16V
RB205	24011104	Res, Chip	100kΩ	J 1/20W	CA17	24619100	Cap, Chip	10μF	M 16V
RB206	24011470	Res, Chip	47Ω	J 1/20W	CA18	24100104	Cap, Chip	0.1μF	Z 25V
RB207	24011104	Res, Chip	100kΩ	J 1/20W	CA19	24619102	Cap, Chip	47μF	M 16V
RB208	24011470	Res, Chip	47Ω	J 1/20W	CA20	24100104	Cap, Chip	0.1μF	Z 25V
RB209	24011104	Res, Chip	100kΩ	J 1/20W	CA21	24619102	Cap, Chip	47μF	M 16V
RB210	24011470	Res, Chip	47Ω	J 1/20W	CA22	24092538	Cap, Chip	1μF	Z 10V
		- MISCELLANEOUS -			CA23	24815223	Cap, Chip	0.022μF	K 50V
PB001	23903047	Socket	DSUB		CA24	24815473	Cap, Chip	0.047μF	K 50V
PB002	23365971	Earphono Jack			CA25	24815333	Cap, Chip	0.033μF	K 50V
PB003	23903047	Socket	DSUB		CA26	24092538	Cap, Chip	1μF	Z 10V
PB004	23365971	Earphono Jack			CA27	24815223	Cap, Chip	0.022μF	K 50V
PB005	23713069	Connector	50P						

LOCATION NUMBER	PART NUMBER	DESCRIPTION				LOCATION NUMBER	PART NUMBER	DESCRIPTION			
CA28	24815473	Cap, Chip	0.047 μ F	K	50V	RA44	24011103	Res, Chip	10k Ω	J	1/20W
CA29	24815333	Cap, Chip	0.033 μ F	K	50V	RA45	24011101	Res, Chip	100 Ω	J	1/20W
CA30	24619100	Cap, Chip	10 μ F	M	16V	RA46	24011101	Res, Chip	100 Ω	J	1/20W
CA31	24100104	Cap, Chip	0.1 μ F	Z	25V	RA47	24011681	Res, Chip	680 Ω	J	1/20W
CA32	24815102	Cap, Chip	1000pF	K	50V	RA48	24011103	Res, Chip	10k Ω	J	1/20W
CA33	24619113	Cap, Chip	1 μ F	M	50V	RA49	24011103	Res, Chip	10k Ω	J	1/20W
CA34	24619113	Cap, Chip	1 μ F	M	50V	RA50	24011103	Res, Chip	10k Ω	J	1/20W
CA35	24666331	Cap, Electrolytic	330 μ F	M	16V	RA51	24011103	Res, Chip	10k Ω	J	1/20W
CA36	24666331	Cap, Electrolytic	330 μ F	M	16V	RA52	24011103	Res, Chip	10k Ω	J	1/20W
CA37	24619102	Cap, Chip	47 μ F	M	16V	RA53	24011332	Res, Chip	3.3k Ω	J	1/20W
CA38	24100104	Cap, Chip	0.1 μ F	Z	25V	RA54	24011332	Res, Chip	3.3k Ω	J	1/20W
CA39	24100104	Cap, Chip	0.1 μ F	Z	25V	RA55	24011332	Res, Chip	3.3k Ω	J	1/20W
CA40	24100104	Cap, Chip	0.1 μ F	Z	25V	RA56	24011101	Res, Chip	100 Ω	J	1/20W
CA41	24619102	Cap, Chip	47 μ F	M	16V	RA57	24011101	Res, Chip	100 Ω	J	1/20W
CA42	24619102	Cap, Chip	47 μ F	M	16V	RA58	24011101	Res, Chip	100 Ω	J	1/20W
CA43	24619102	Cap, Chip	47 μ F	M	16V	RA59	24011101	Res, Chip	100 Ω	J	1/20W
CA44	24619100	Cap, Chip	10 μ F	M	16V	RA60	24011103	Res, Chip	10k Ω	J	1/20W
CA45	24100104	Cap, Chip	0.1 μ F	Z	25V	RA61	24011103	Res, Chip	10k Ω	J	1/20W
CA53	24667221	Cap, Electrolytic	220 μ F	M	25V	RA62	24011472	Res, Chip	4.7k Ω	J	1/20W
CA54	24100104	Cap, Chip	0.1 μ F	Z	25V	RA63	24011472	Res, Chip	4.7k Ω	J	1/20W
CA55	24295106	Cap, Chip	10 μ F	M	25V	RA64	24011101	Res, Chip	100 Ω	J	1/20W
CA56	24100104	Cap, Chip	0.1 μ F	Z	25V	RA65	24011222	Res, Chip	2.2k Ω	J	1/20W
CA57	24295106	Cap, Chip	10 μ F	M	25V	RA66	24011222	Res, Chip	2.2k Ω	J	1/20W
CA58	24088953	Cap, Chip	33 μ F	M	16V	RA67	24011222	Res, Chip	2.2k Ω	J	1/20W
CA59	24100104	Cap, Chip	0.1 μ F	Z	25V	RA74	24000606	Res, Chip	8.2k Ω	F	1/16W
CA60	24088953	Cap, Chip	33 μ F	M	16V	RA75	24000573	Res, Chip	1k Ω	F	1/16W
CA61	24100104	Cap, Chip	0.1 μ F	Z	25V	RA76	24019007	Res, Chip	100 Ω	J	1W
CA62	24088953	Cap, Chip	33 μ F	M	16V	RA77	24000449	Res, Chip	6.2k Ω	F	1/16W
CA63	24100104	Cap, Chip	0.1 μ F	Z	25V	RA78	24000573	Res, Chip	1k Ω	F	1/16W
CA64	24100104	Cap, Chip	0.1 μ F	Z	25V	RA79	24000590	Res, Chip	3k Ω	F	1/16W
CA65	24100104	Cap, Chip	0.1 μ F	Z	25V	RA80	24000573	Res, Chip	1k Ω	F	1/16W
CA66	24100104	Cap, Chip	0.1 μ F	Z	25V	RA81	24871750	Res, Chip	75 Ω	J	1/8W
CA67	24667221	Cap, Electrolytic	220 μ F	M	25V	RA82	24011101	Res, Chip	100 Ω	J	1/20W
CA68	24667221	Cap, Electrolytic	220 μ F	M	25V	RA86	24011103	Res, Chip	10k Ω	J	1/20W
CA69	24667221	Cap, Electrolytic	220 μ F	M	25V	RA87	24000488	Res, Chip	3.9 Ω	J	1/2W
CA70	24667221	Cap, Electrolytic	220 μ F	M	25V	RA88	24000488	Res, Chip	3.9 Ω	J	1/2W
CA71	24665471	Cap, Electrolytic	470 μ F	M	10V	RA89	24000488	Res, Chip	3.9 Ω	J	1/2W
CA72	24100104	Cap, Chip	0.1 μ F	Z	25V	RA90	24000445	Res, Chip Jumper	0 Ω		
CA73	24665471	Cap, Electrolytic	470 μ F	M	10V			- MISCELLANEOUS -			
CA74	24100104	Cap, Chip	0.1 μ F	Z	25V	PA01	23365684	Phono Jack	S-VHS, 4P		
		- RESISTORS -				PA02	23365275	Phono Jack			
RA01	24871750	Res, Chip	75 Ω	J	1/8W	PA03	23903048	Socket	FPC/FFC		
RA02	24871750	Res, Chip	75 Ω	J	1/8W	PA04	23368672	Plug	26P		
RA03	24011473	Res, Chip	47k Ω	J	1/20W	PA05	23903048	Socket	FPC/FFC		
RA04	24011473	Res, Chip	47k Ω	J	1/20W						
RA07	24011470	Res, Chip	47 Ω	J	1/20W	U007	23784175	P C Board Assy	Sub Digital		
RA09	24011101	Res, Chip	100 Ω	J	1/20W			- INTEGRATED CIRCUITS -			
RA12	24011470	Res, Chip	47 Ω	J	1/20W	QD700	23906863	IC	SN74LVC157AP		
RA14	24011101	Res, Chip	100 Ω	J	1/20W	QF503	B0488399	IC	TC74HC123AF		
RA17	24011470	Res, Chip	47 Ω	J	1/20W			- TRANSISTORS -			
RA19	24011101	Res, Chip	100 Ω	J	1/20W	QF501	A6549570	Transistor, Chip	2SA1586-Y		
RA20	24011333	Res, Chip	33k Ω	J	1/20W	QF502	A6549570	Transistor, Chip	2SA1586-Y		
RA21	24011473	Res, Chip	47k Ω	J	1/20W			- DIODES -			
RA22	24011101	Res, Chip	100 Ω	J	1/20W	DF530	23118041	Diode, Chip	MA111		
RA23	24011222	Res, Chip	2.2k Ω	J	1/20W	DF531	23118041	Diode, Chip	MA111		
RA24	24011101	Res, Chip	100 Ω	J	1/20W			- CAPACITORS -			
RA25	24011333	Res, Chip	33k Ω	J	1/20W	CD700	24088079	Cap, Chip	10 μ F	M	10V
RA26	24011473	Res, Chip	47k Ω	J	1/20W	CD701	24100104	Cap, Chip	0.1 μ F	Z	25V
RA27	24011101	Res, Chip	100 Ω	J	1/20W	CF510	24092441	Cap, Chip	1 μ F	Z	16V
RA28	24011222	Res, Chip	2.2k Ω	J	1/20W	CF520	24092441	Cap, Chip	1 μ F	Z	16V
RA29	24011101	Res, Chip	100 Ω	J	1/20W	CF530	24092178	Cap, Chip	0.1 μ F	K	25V
RA30	24011101	Res, Chip	100 Ω	J	1/20W	CF531	24092441	Cap, Chip	1 μ F	Z	16V
RA31	24011332	Res, Chip	3.3k Ω	J	1/20W	CF532	24092441	Cap, Chip	1 μ F	Z	16V
RA32	24011101	Res, Chip	100 Ω	J	1/20W			- RESISTORS -			
RA33	24011332	Res, Chip	3.3k Ω	J	1/20W	RD700	24011470	Res, Chip	47 Ω	J	1/20W
RA34	24011101	Res, Chip	100 Ω	J	1/20W	RD701	24011101	Res, Chip	100 Ω	J	1/20W
RA35	24011101	Res, Chip	100 Ω	J	1/20W	RF510	24011103	Res, Chip	10k Ω	J	1/20W
RA36	24011472	Res, Chip	4.7k Ω	J	1/20W	RF511	24011104	Res, Chip	100k Ω	J	1/20W
RA37	24011472	Res, Chip	4.7k Ω	J	1/20W	RF513	24011223	Res, Chip	22k Ω	J	1/20W
RA38	24011152	Res, Chip	1.5k Ω	J	1/20W	RF520	24011103	Res, Chip	10k Ω	J	1/20W
RA39	24011471	Res, Chip	470 Ω	J	1/20W	RF521	24011104	Res, Chip	100k Ω	J	1/20W
RA40	24011152	Res, Chip	1.5k Ω	J	1/20W	RF523	24011223	Res, Chip	22k Ω	J	1/20W
RA41	24011471	Res, Chip	470 Ω	J	1/20W	RF530	24011823	Res, Chip	82k Ω	J	1/20W
RA42	24011103	Res, Chip	10k Ω	J	1/20W	RF531	24011823	Res, Chip	82k Ω	J	1/20W
RA43	24011104	Res, Chip	100k Ω	J	1/20W			- MISCELLANEOUS -			

LOCATION NUMBER	PART NUMBER	DESCRIPTION		LOCATION NUMBER	PART NUMBER	DESCRIPTION	
ND710	23969797	Tape		FH001	23144614	Fuse	125V, 0.5A
ND711	23969797	Tape		PH002	23368708	Plug	20P, 1mm
ZD700	23103823	Filter	TEM2027D	SH001	23344088	Push Switch	
■U0031	23783706	P C Board Assy	CAMSW (TLP451, TLP651)	SH002	23344088	Push Switch	
		- INTEGRATED CIRCUITS -		SH003	23344088	Push Switch	
QH001	70129738	IC	PQ20VZ1U	SH004	23344088	Push Switch	
QH002	70129738	IC	PQ20VZ1U	SH005	23344088	Push Switch	
QH003	70129738	IC	PQ20VZ1U	■U0032	23783707	P C Board Assy	LED (TLP451, TLP651)
QH004	A6030630	IC	TC7S08F			- TRANSISTORS -	
QH005	23906234	IC	M62320FP	QH701	23314344	Transistor, Chip	IMX1
QH006	23906782	IC	TSOP1838	QH702	23314344	Transistor, Chip	IMX1
QH041	A6030630	IC	TC7S08F	QH703	23314344	Transistor, Chip	IMX1
		- DIODES -		QH704	23314344	Transistor, Chip	IMX1
DH001	23358539	Diode, LED	SML-020MLTT6			- DIODES -	
DH401	23357168	Diode, Zener	UDZSTE176. 2B	DH700	23118275	Diode, Zener	RD18M-T1BB2
DH501	23357168	Diode, Zener	UDZSTE176. 2B	DH701	23358546	Diode, LED	NSPW310BS
DH502	23357168	Diode, Zener	UDZSTE176. 2B	DH702	23358546	Diode, LED	NSPW310BS
DH503	23357168	Diode, Zener	UDZSTE176. 2B	DH703	23358546	Diode, LED	NSPW310BS
DH504	23357168	Diode, Zener	UDZSTE176. 2B	DH704	23358546	Diode, LED	NSPW310BS
DH505	23357168	Diode, Zener	UDZSTE176. 2B	DH705	23358546	Diode, LED	NSPW310BS
DH506	23357168	Diode, Zener	UDZSTE176. 2B	DH706	23358546	Diode, LED	NSPW310BS
DH507	23357168	Diode, Zener	UDZSTE176. 2B	DH707	23358546	Diode, LED	NSPW310BS
DH508	23357168	Diode, Zener	UDZSTE176. 2B	DH708	23358546	Diode, LED	NSPW310BS
DH509	A7150800	Diode, Chip	1SS187	DH709	23358546	Diode, LED	NSPW310BS
DH510	23357168	Diode, Zener	UDZSTE176. 2B	DH710	23358546	Diode, LED	NSPW310BS
DH511	23357168	Diode, Zener	UDZSTE176. 2B	DH711	23358546	Diode, LED	NSPW310BS
DH601	A7150800	Diode, Chip	1SS187	DH712	23358546	Diode, LED	NSPW310BS
DH602	23357168	Diode, Zener	UDZSTE176. 2B	DH720	23118275	Diode, Zener	RD18M-T1BB2
		- CAPACITORS -		DH721	23118275	Diode, Zener	RD18M-T1BB2
CH101	24295106	Cap, Chip	10 μ F M 25V	DH722	23118275	Diode, Zener	RD18M-T1BB2
CH102	24092178	Cap, Chip	0.1 μ F K 25V	DH723	23118275	Diode, Zener	RD18M-T1BB2
CH103	24092178	Cap, Chip	0.1 μ F K 25V			- RESISTORS -	
CH104	24295106	Cap, Chip	10 μ F M 25V	RH701	24872472	Res, Chip	4.7k Ω J 1/16W
CH201	24295106	Cap, Chip	10 μ F M 25V	RH702	24872471	Res, Chip	470 Ω J 1/16W
CH202	24092178	Cap, Chip	0.1 μ F K 25V	RH703	24872470	Res, Chip	47 Ω J 1/16W
CH203	24092178	Cap, Chip	0.1 μ F K 25V	RH704	24872472	Res, Chip	4.7k Ω J 1/16W
CH204	24088951	Cap, Chip	6.8 μ F M 16V	RH705	24872471	Res, Chip	470 Ω J 1/16W
CH301	24088951	Cap, Chip	6.8 μ F M 16V	RH706	24872470	Res, Chip	47 Ω J 1/16W
CH302	24092178	Cap, Chip	0.1 μ F K 25V	RH707	24872472	Res, Chip	4.7k Ω J 1/16W
CH303	24092178	Cap, Chip	0.1 μ F K 25V	RH708	24872471	Res, Chip	470 Ω J 1/16W
CH304	24088951	Cap, Chip	6.8 μ F M 16V	RH709	24872470	Res, Chip	47 Ω J 1/16W
CH401	24092178	Cap, Chip	0.1 μ F K 25V	RH710	24872472	Res, Chip	4.7k Ω J 1/16W
CH402	24092178	Cap, Chip	0.1 μ F K 25V	RH711	24872471	Res, Chip	470 Ω J 1/16W
CH501	24092178	Cap, Chip	0.1 μ F K 25V	RH712	24872470	Res, Chip	47 Ω J 1/16W
CH501	24088948	Cap, Chip, Tantalum	47 μ F M 10V			- MISCELLANEOUS -	
CH602	24781152	Cap, Chip	1500pF J 50V	PH700	70164729	Plug	3P, 1.25mm
		- RESISTORS -					
RH101	24000593	Res, Chip	10k Ω F 1/16W				
RH102	24000573	Res, Chip	1k Ω F 1/16W				
RH201	24000449	Res, Chip	6.2k Ω F 1/16W				
RH202	24000573	Res, Chip	1k Ω F 1/16W				
RH203	24019007	Res, Chip	100 Ω J 1W				
RH301	24000422	Res, Chip	2.2k Ω F 1/16W				
RH302	24000573	Res, Chip	1k Ω F 1/16W				
RH501	24872472	Res, Chip	4.7k Ω J 1/16W				
RH502	24872472	Res, Chip	4.7k Ω J 1/16W				
RH503	24872472	Res, Chip	4.7k Ω J 1/16W				
RH504	24872472	Res, Chip	4.7k Ω J 1/16W				
RH506	24872472	Res, Chip	4.7k Ω J 1/16W				
RH507	24872472	Res, Chip	4.7k Ω J 1/16W				
RH508	24872472	Res, Chip	4.7k Ω J 1/16W				
RH509	24872101	Res, Chip	100 Ω J 1/16W				
RH510	24872101	Res, Chip	100 Ω J 1/16W				
RH511	24872101	Res, Chip	100 Ω J 1/16W				
RH512	24872101	Res, Chip	100 Ω J 1/16W				
RH513	24872101	Res, Chip	100 Ω J 1/16W				
RH514	24872101	Res, Chip	100 Ω J 1/16W				
RH515	24872221	Res, Chip	220 Ω J 1/16W				
RH516	24872101	Res, Chip	100 Ω J 1/16W				
RH517	24872101	Res, Chip	100 Ω J 1/16W				
RH518	24872101	Res, Chip	100 Ω J 1/16W				
RH601	24872101	Res, Chip	100 Ω J 1/16W				
RH602	24872472	Res, Chip	4.7k Ω J 1/16W				
		- MISCELLANEOUS -					

SPECIFICATION

[Main Unit]

Power requirements	AC 100 – 240V 50/60Hz
Power consumption	TLP450, TLP650: 220W
	TLP451, TLP651: 235W
Mass	TLP450, TLP650: 3.7 Kg
	TLP451, TLP651: 4.5 Kg
Dimensions	TLP450, TLP650: 318 x 87 x 232 (mm) (W/H/D) (Including the projecting sections)
	TLP451, TLP651: 318 x 87 x 288 (mm) (W/H/D) (Including the projecting sections)
Ambient environment	Temperature: 0°C to 35°C Humidity: 30% to 70% RH
Lamp	UHP lamp 150W
Speaker	1W (monaural)
RGB INPUT	RGB signal: (D-sub 15-pin) Audio: 1V(p-p), more than 22k Ω , ϕ 3.5mm stereo mini jack
VIDEO INPUT	S-video signal: Mini DIN 4-pin
	Video signal: 1V(p-p), 75 Ω
	Audio: 1V(p-p), more than 22k Ω , RCA pin jack
MONITOR OUTPUT	RGB signal: D-sub 15-pin
	Audio: 1V(p-p), less than 2.2k Ω , ϕ 3.5mm stereo mini jack
CONTROL terminal	Mini DIN 8-pin (RS-232C)
Cabinet Material	ABS resin

[Liquid Crystal Display]

Projection system	3-pannels transmission
Panel size	0.9 inches
Driving system	TFT active matrix
Picture elements	TLP650, TLP651: 786,432 pixels (1024 x 768 dots) x 3
	TLP450, TLP451: 480,000 pixels (800 x 600 dots) x 3

[Projection Lens]

Lens	Zooming lens F=1.8 – 2.1 f=36 – 47mm
Focusing	Manual operation
Zooming	Manual operation

[Document Imaging Camera]

Lens	F=1.8 – 2.3, f=5.8 – 23.2mm
Focus	Manual operation
Iris	Auto/Level adjustment allowed
Image element	1/3 inch CCD
Total picture elements	810,000 pixels
Resolution	Horizontal 1024, vertical 768
Lighting	TLP450E, TLP451E, TLP650E and TLP651E: LED light (Class 2)
	TLP450U, TLP451U, TLP650U and TLP651U: LED light

[Accessories]

Wireless remote control	1
AA size battery	2
Power cord	2 (TLP450E, TLP451E, TLP650E and TLP651E)
Power cord	1 (TLP450U, TLP451U, TLP650U and TLP651U)
RGB cable	1 (3m)
Adapter for Macintosh computers	1
PC Audio cable	1 (3m)
Audio/Video cable	1 (3m)
Lens cover	1
REMOTE MOUSE RECEIVER	1
IBM/MAC mouse cable (for REMOTE MOUSE RECEIVER)	1
PS/2 mouse adapter (for REMOTE MOUSE RECEIVER)	1
MAC mouse adapter (for REMOTE MOUSE RECEIVER)	1
USB mouse cable (for REMOTE MOUSE RECEIVER)	1
Pointing rod	1
Carrying case	1

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